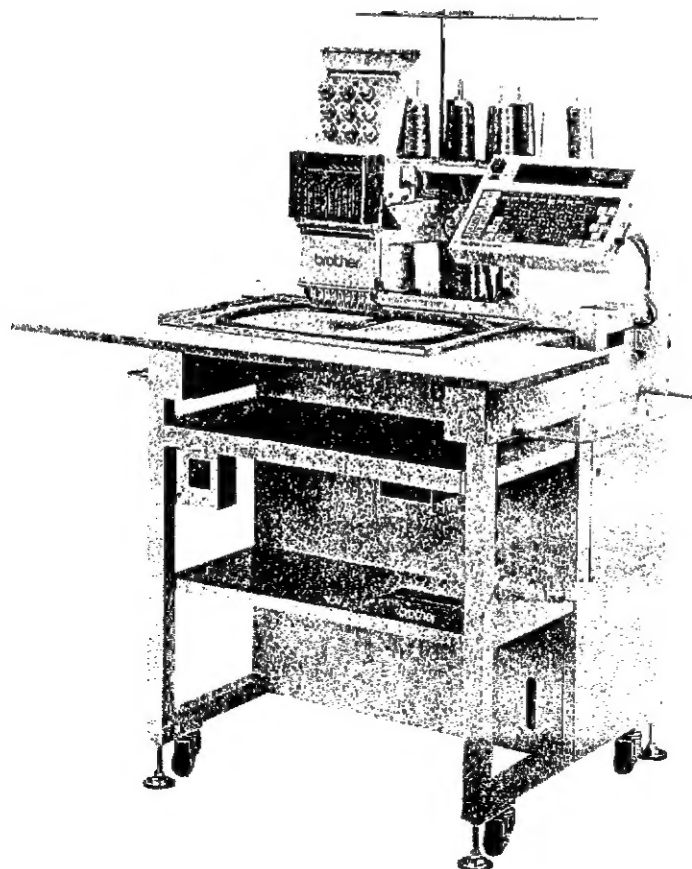


brother®

SINGLE HEAD ELECTRONIC EMBROIDERY MACHINE

BAS-411

INSTRUCTION MANUAL



CONTENTS

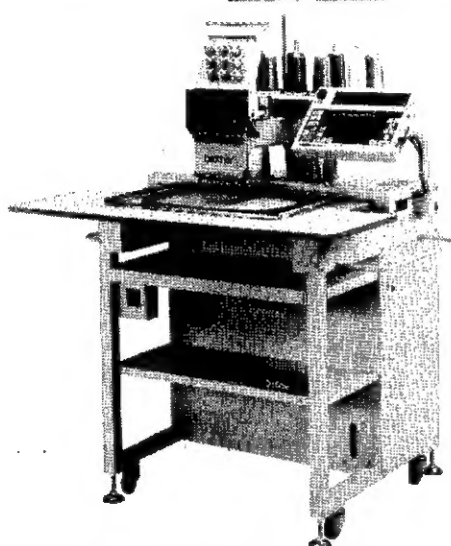
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The features of machine

- 1) This interactive machine enables even a complete beginner to easily embroider patterns from monograms to multi-colored patterns.
- 2) This machine can be used in three different ways to respond to the various needs of the users:
 - alone
 - with the editing system
 - connected with the communication line to operate the five machines at one time.
- 3) By setting a program in advance, thread changing and trimming can be done automatically. Up to 99 colors can be put in a pattern and up to 168,000 stitches can be added to the memory.
- 4) Its wide sewing area is V285mm x H450mm. Also, the removal of the embroidery frame can be done easily.
- 5) Its wide variety of editing functions enables complex embroideries for many different purposes.
- 6) Besides 28 letter styles for the alphabet, it has an optional design frame and design floppy disks which include the patterns of animals, flowers, sports and zodiac signs.
If the tape reader (optional) is connected, the tapes and the floppy disks of Tajima, and the tapes of Barudan can be used.
- 7) Quick entry of alphanumerics is now possible with its easy-to-use keyboard.
- 8) By removing the table and using the cylindrical bed, embroidery for tubular materials can be done effortlessly. Embroidery on the caps can also be done using the cap frame device.

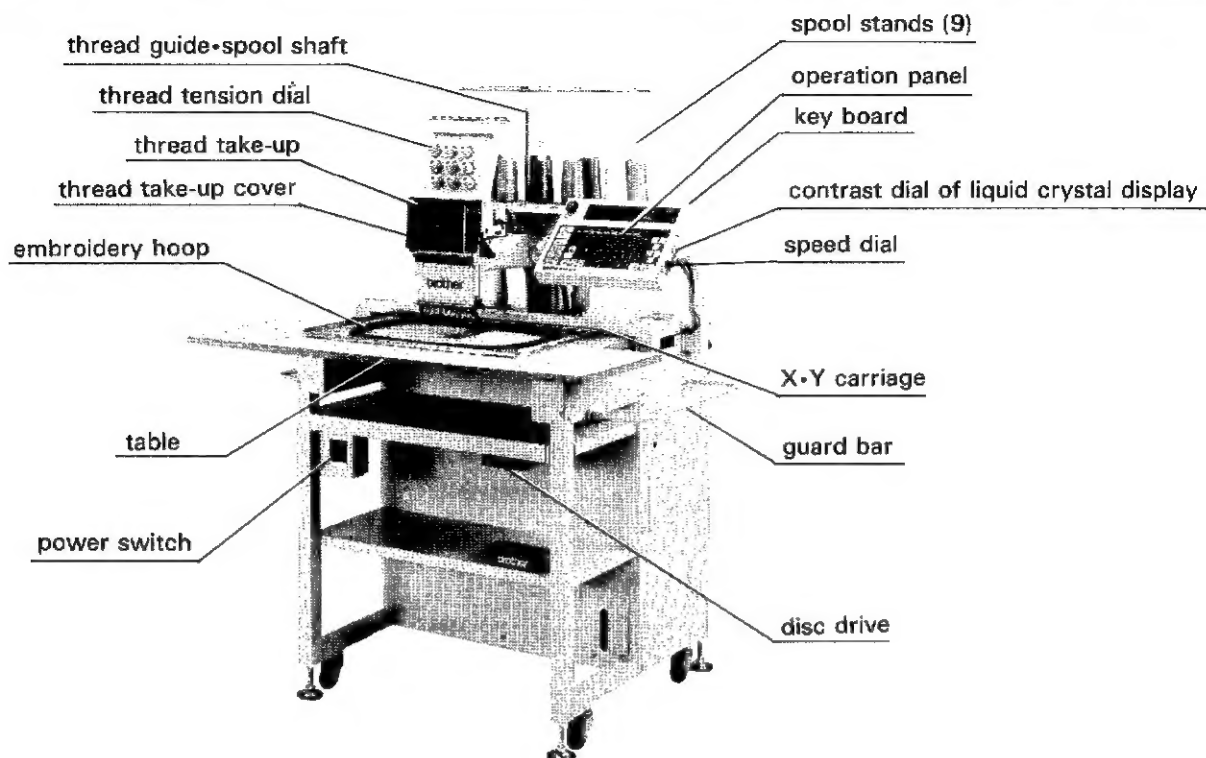
Specifications



Embroidery machine used	9 needle embroidery machine
Application	Pattern embroidery
Sewing speed	Maximum 1000 spm (6 levels) normal rotation rate 650 spm
Sewing area	V285mm x H450mm
Stitch length	0.1 mm - 12.7 mm (minimum pitch 0.1 mm)
Storage medium	3.5" 2DD.2HD (for letter data) floppy disk
Bobbin thread trimming	Automatic thread trimmer
Bobbin thread winding	Bobbin thread winding with exclusive motor
Needle thread breakage	Needle thread breakage detector
Power supply	Single phase 240V, 220V, 200V, 120V maximum 500VA
Weight	165kg
Dimensions	W1050 mm x L940 mm x H1380 mm
Options	Paper tape reader, design floppy disks, design frame, embroidery hoops in each size, holder base, ML651 lamp set, cap framedevice, boring attachment, marking light

CHAPTER 1 Setting up

1 Part names



*Standard hoop and holder base

- Embroidery hoop plastic square hoop (45 × 32)



- Holder base holder base assembly



- Floppy disk for 28 letter styles of the alphabet

*Optional accessories (sold separately)

- Cap frame device
- Boring attachment
- Design floppy disks sports, flowers, animals, zodiac signs, design frame
- Tubular frame holder base(24 × 30)



Embroidery hoops (including spider net hoops) in various sizes are also available.

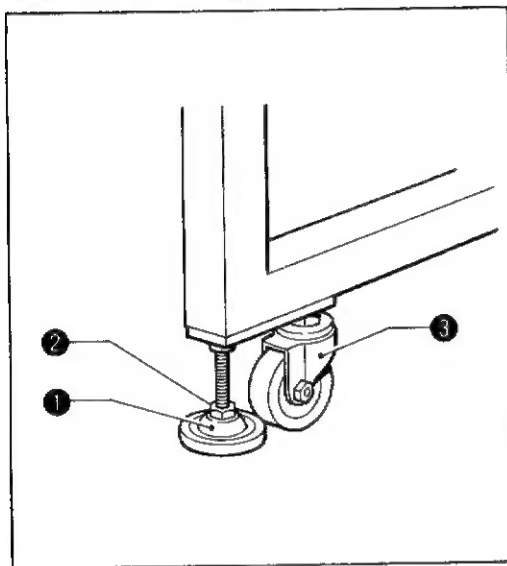
After installing, get the power supply from an dedicated outlet .

1 Carrying machine

When holding the machine, be sure to hold the machine body (frame).

[NOTE] Do NOT hold the table or the guard bar.

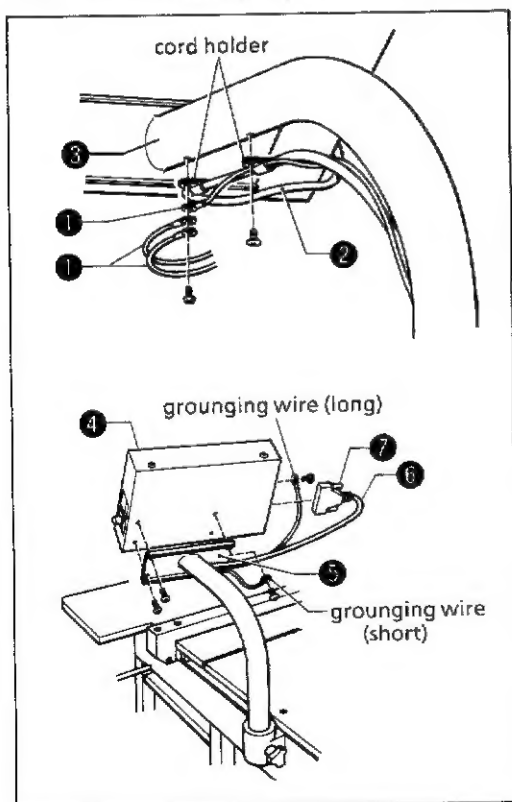
2 Installing machine



- 1) Secure the level adjusters ① so that the upper surface of the table is horizontal.
- 2) If the table wobbles, loosen the nuts ② and turn the level adjusters ① to adjust.

When moving the machine, lift the level adjusters ① so that the machine can be moved by the casters ③ on the machine body.

3 Installing operation panel



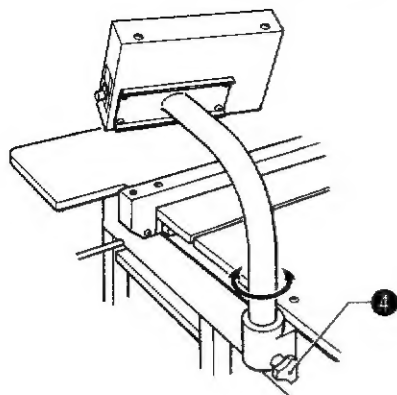
- 1) Attach the keyboard cable ② and the grounding wire ① to the keyboard stand ③ with screws and the cord holder.
- 2) Attach the keyboard ④ to the keyboard stand ⑤ with four screws.

[NOTE] At this time, the shorter grounding wire should be attached with one of the four screws.

- 3) Plug the keyboard cable ⑥ to the keyboard ④ and secure with screw ⑦.

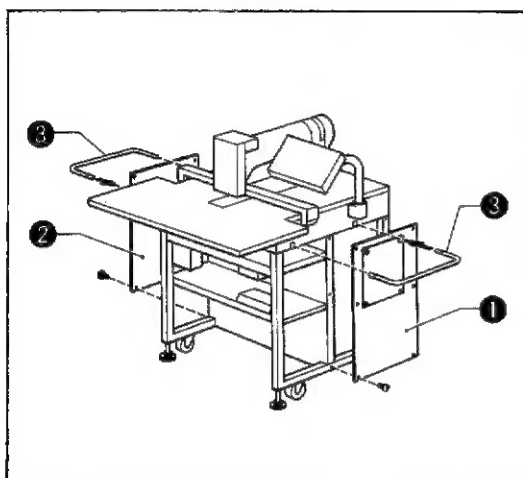
[NOTE] At this time, the longer grounding wire should be attached with the screw.

2 Installation (2)

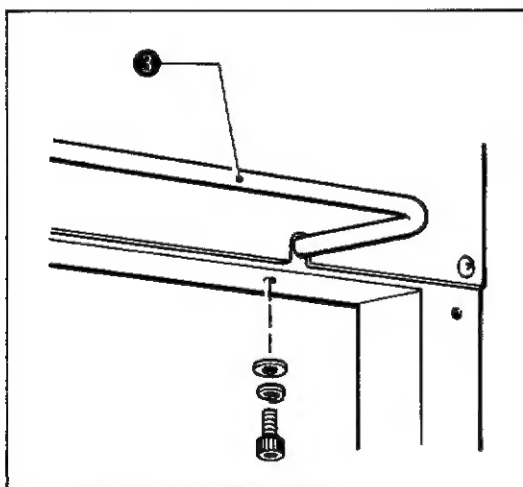


Attach the screws ❶ so that the panel is in the best position for the operator to use.

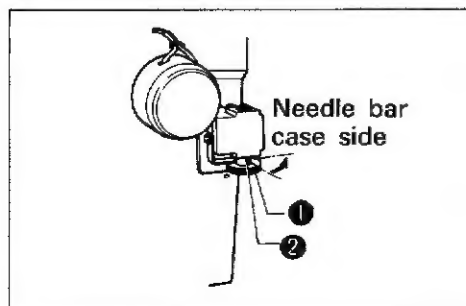
4 Installing guard bar



- 1) Loosen the screws, and covers RD ❶ and LD ❷.
- 2) Insert the guard bar ❸ and attach it with the bolt and washer from the bottom side of the frame.
- 3) Install covers RD ❶ and LD ❷ with the screws.



5 Setting up machine



Before shipping, the machine is set as shown in the figure on the left.

Turn the clutch knurl ❶ until its red mark ❷ is on the needle bar case side. The machine will be in the automatic jump condition. This is the standard condition of the machine.

[NOTE] Refer to the note on P.32 "4 Preparation of machine (1)."

3 Lubrication (1)

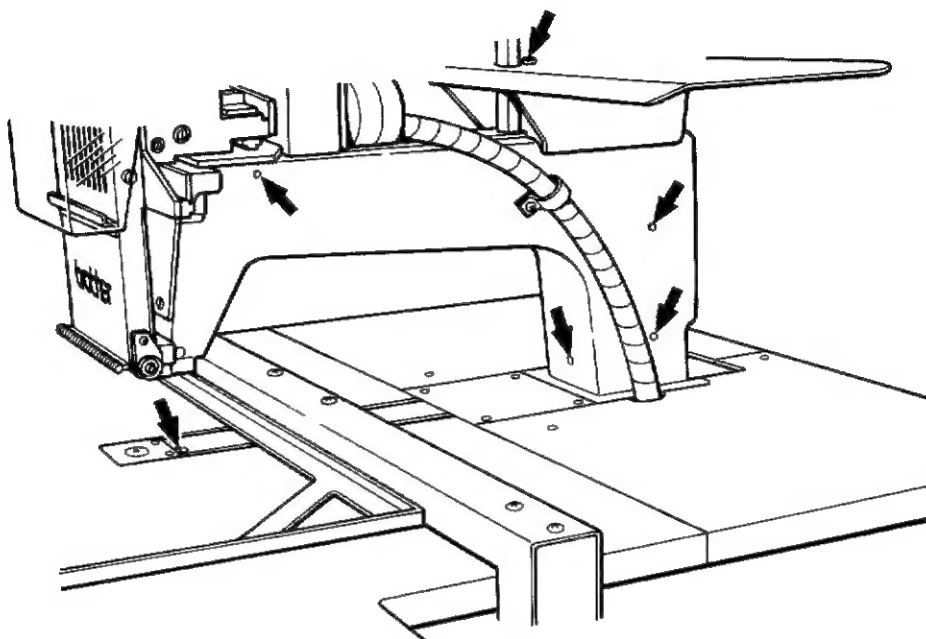
Lubrication is necessary for keeping the machine in good condition.

Every day before using the machine, add 1-2 drop(s) of oil at the each arrow in the figure.

[NOTE] ① Be sure to use the brother-specified sewing machine oil for lubrication.

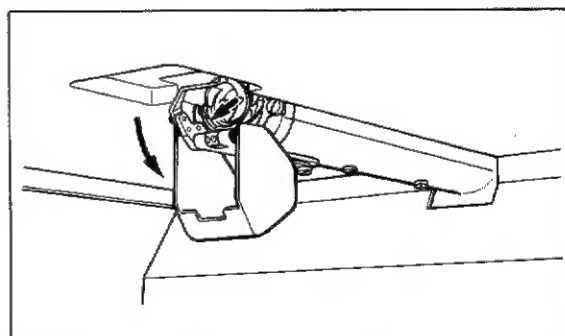
② Too much lubrication may cause the oil to drip on the material.

- 1) Lubricate the six places at the arrows.

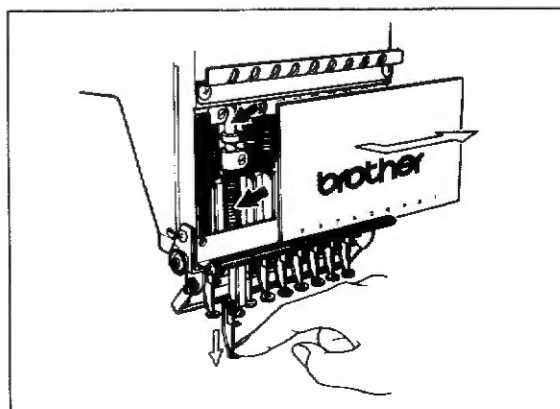


- 2) Add a drop of oil at the rail of the rotary hook.

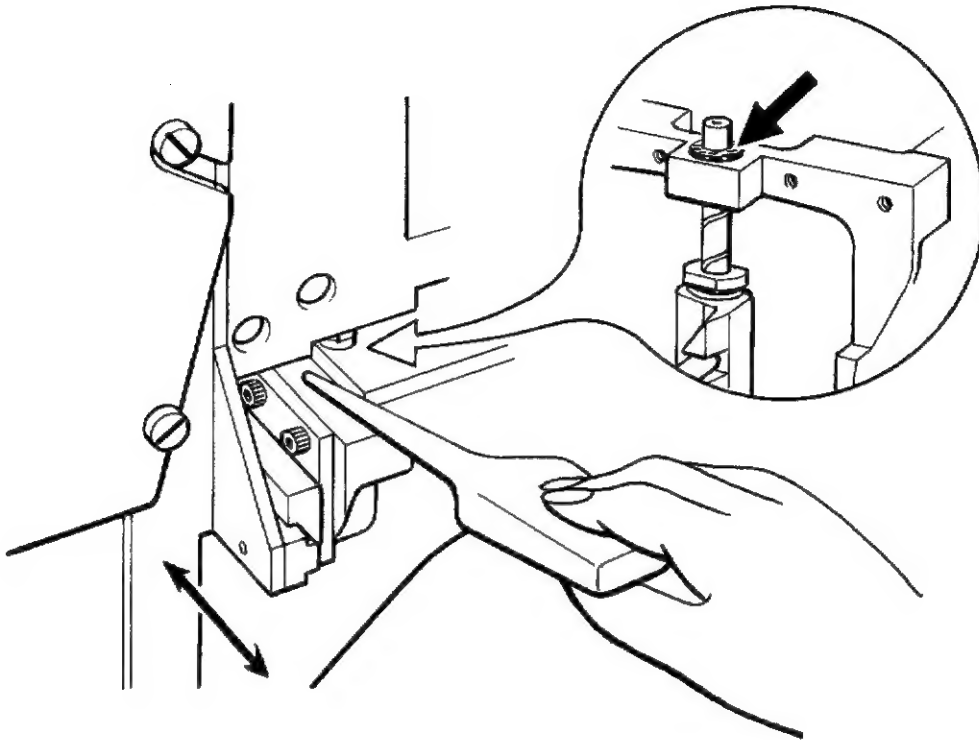
[NOTE] Do not lubricate other than the rotary hook.



- 3) Lubricate the two places of each needle of the needle bar. (18 places should be lubricated in total.)

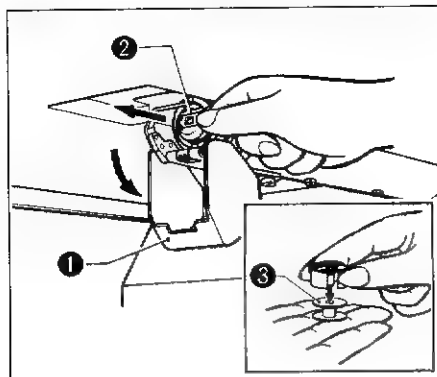


Move the needle bar case all the way to the right or the left side. From the side of the machine head, apply one or two drop(s) of grease to the base needle bar and the base needle bar felt. When the machine is used every day, lubricate daily before using.



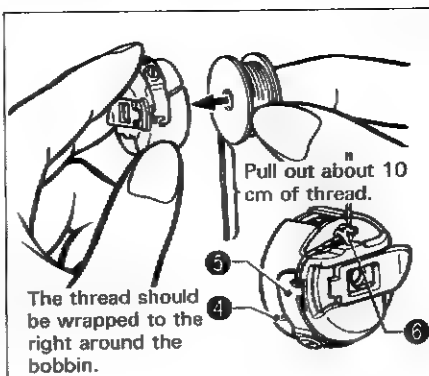
4 Replacing bobbin

1. Removing bobbin case



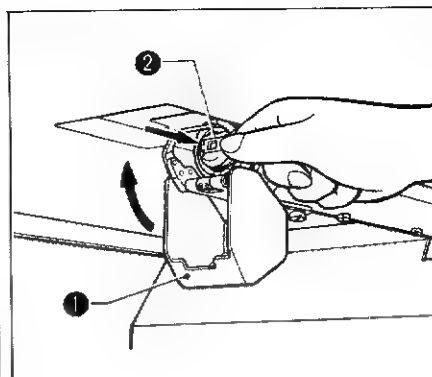
- 1) Open the rotary hook assembly cover ①.
- 2) Hold the knob ② and remove the bobbin case.
- 3) Close the knob and remove the bobbin ③.

2. Replacing bobbin



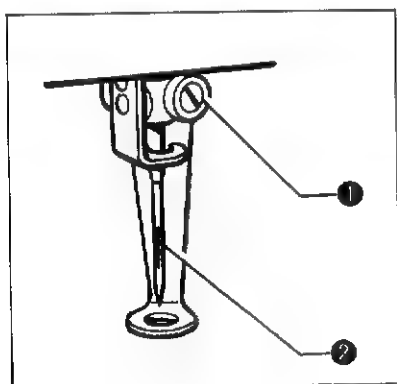
- 1) Put the bobbin in the bobbin case.
- 2) Slide the thread under the tension spring ⑤ through the notch ④.
- 3) Pull out the thread from the thread hole and pass it through the hook ③.
- 4) Pull out the thread about 50mm.

3. Attaching bobbin case



- 1) Hold the knob ② and attach the bobbin case.
 - 2) Close the cover ①.
- * The standard tension of the bobbin thread should be about 20-30g.

5 Replacing needle



1. Removing needle

Loosen the thumb screw ① and remove the needle ②.

2. Attaching needle

With the flat side facing the front, insert the needle all the way until it meets the end of the needle bar. Tighten the thumb screw ① firmly.

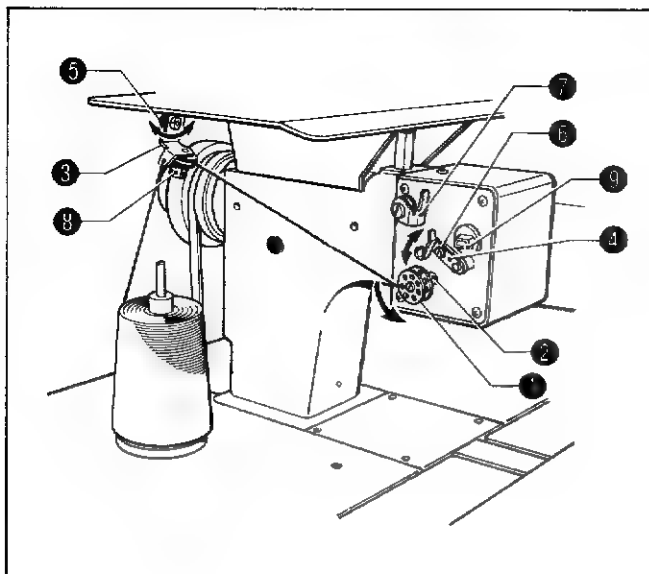
[NOTE] Set the needle so that the notched part comes on the rotary hook side.

Materials and needle selection

Fabric type	Needles	Needle numbers
Denim	DB x K5	#14,
Leather		#16, #18
Handkerchief		#9~#10
Shirt		#11,
Towel		#12, #13

[NOTE1] When using special threads such as the gold, silver and ramé yarn, use a heavy-duty needle (#11-#16). For better finishing, paste the waxed paper on the back of the material.

[NOTE2] For general materials, use DB x K5 #11 to #18 according to the thickness of the material. For knitted materials, use DB x K23 #11. Its round end prevents the knit thread from breaking.



- 1) Turn on the power.
- 2) Press the bobbin ① on the bobbin winder shaft ②.
- 3) Pass the thread through the thread guide ③.
- 4) Wind the thread on the bobbin ① several times in the direction of the arrow.
- 5) Press the bobbin presser ④.

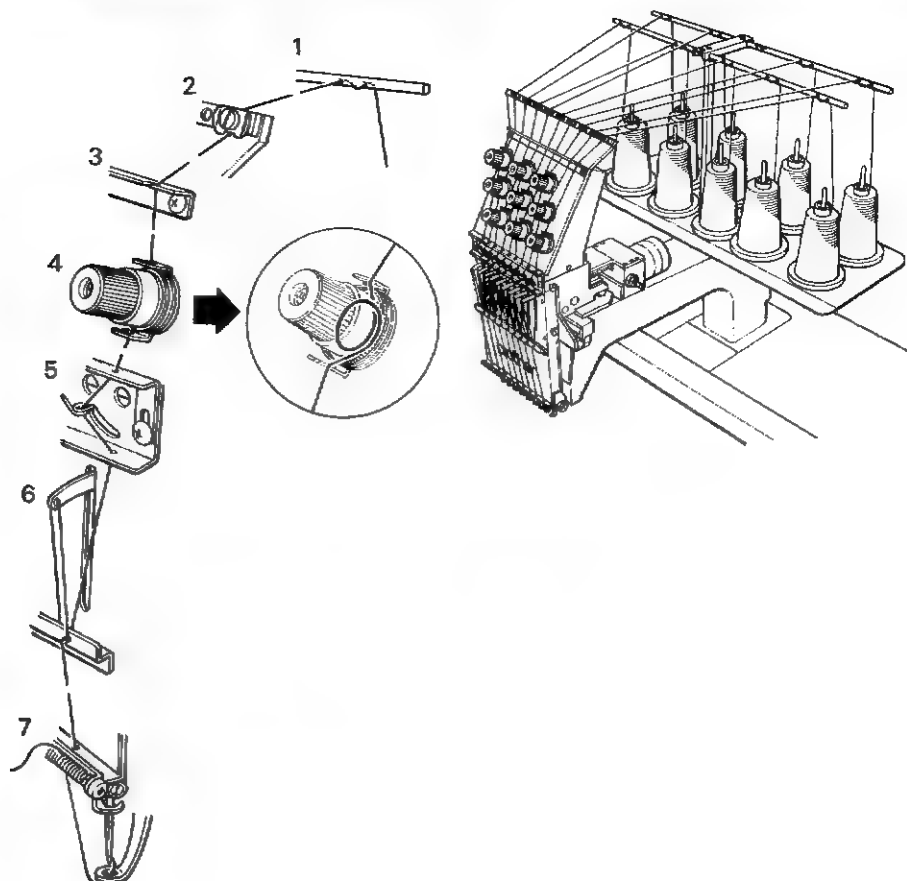
[NOTE] If the thread is not wound evenly on the bobbin, loosen the screw ⑤ and move the thread guide ③ right and left. When winding more thread on the bobbin, loosen the screw ⑤, then move the bobbin presser ④.

- 6) When the winding is finished, remove the bobbin from the bobbin winder shaft and trim the thread with the thread trimmer ⑦.

[NOTE 1] If the thread comes out from the thread guide ③, loosen the knob ⑥. If the thread is wound too loose, tighten the knob ⑥.

[NOTE 2] The thread winder motor does not operate if the circuit protector activated. In that case, leave the protector until it's cooled off. Then, press the protector switch ⑨.

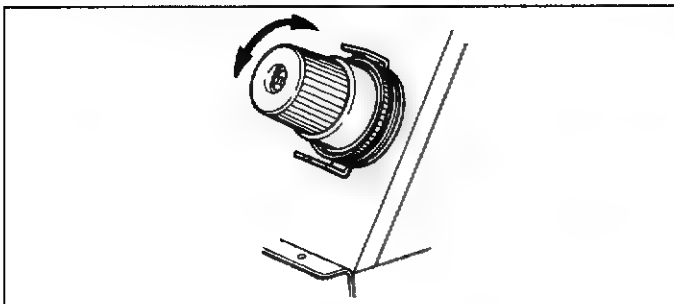
If the protector is not cooled off, the switch does not work.



Procedures

- 1) Pass the thread up through the hole of the thread guide from the stand spool. Then, pass the thread over around and up through the second hole of the thread guide according to the diagram.
- 2) String the thread by lifting each thread guide tension disk with a finger.
- 3) Pass the thread through the thread path via the thread guide tension disk.
- 4) Pass the thread through the thread guide, wrapping it once around around the tension disk clockwise.
- 5) Pass the thread through the upper hole of the 2-stage thread guide, then thread the thread breakage detector spring.
- 6) Put the thread on the inner thread guide through the hole of the thread take-up. Pass the thread through the inner thread guide again.
- 7) Put the thread into a hole of the lower thread guide, then pass it through the thread path of the needle clamp through the presser foot and finally through the eye of the needle.

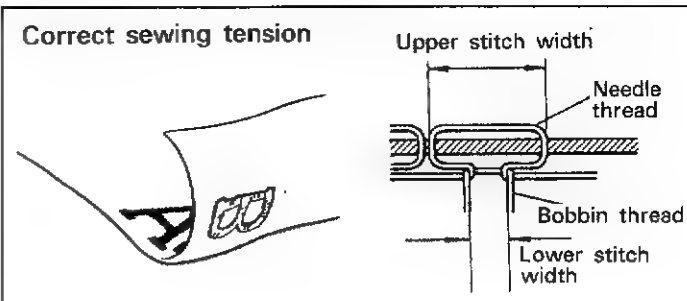
Needle thread tension



If the needle thread tension is too high, turn the dial counterclockwise.

If the needle thread tension is too low, turn the dial clockwise.

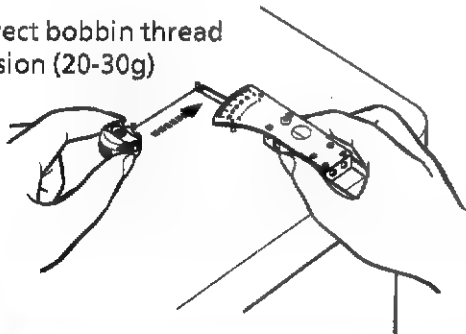
Correct sewing tension



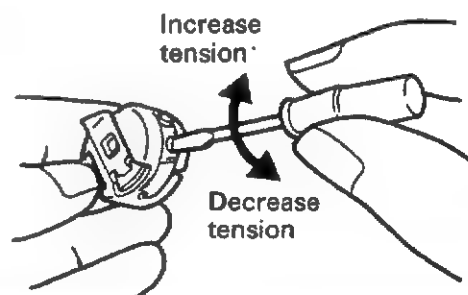
Adjust the tension dial so that the needle thread is pulled to the back of the material, and the lower stitch width is about $\frac{1}{3}$ of the upper stitch width.

Bobbin thread tension

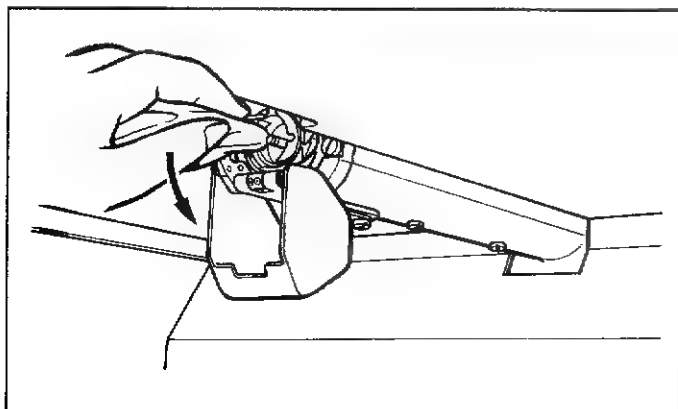
Correct bobbin thread tension (20-30g)



Use a tension gauge to adjust.



Keep the machine clean and unlogged to prevent machine trouble.



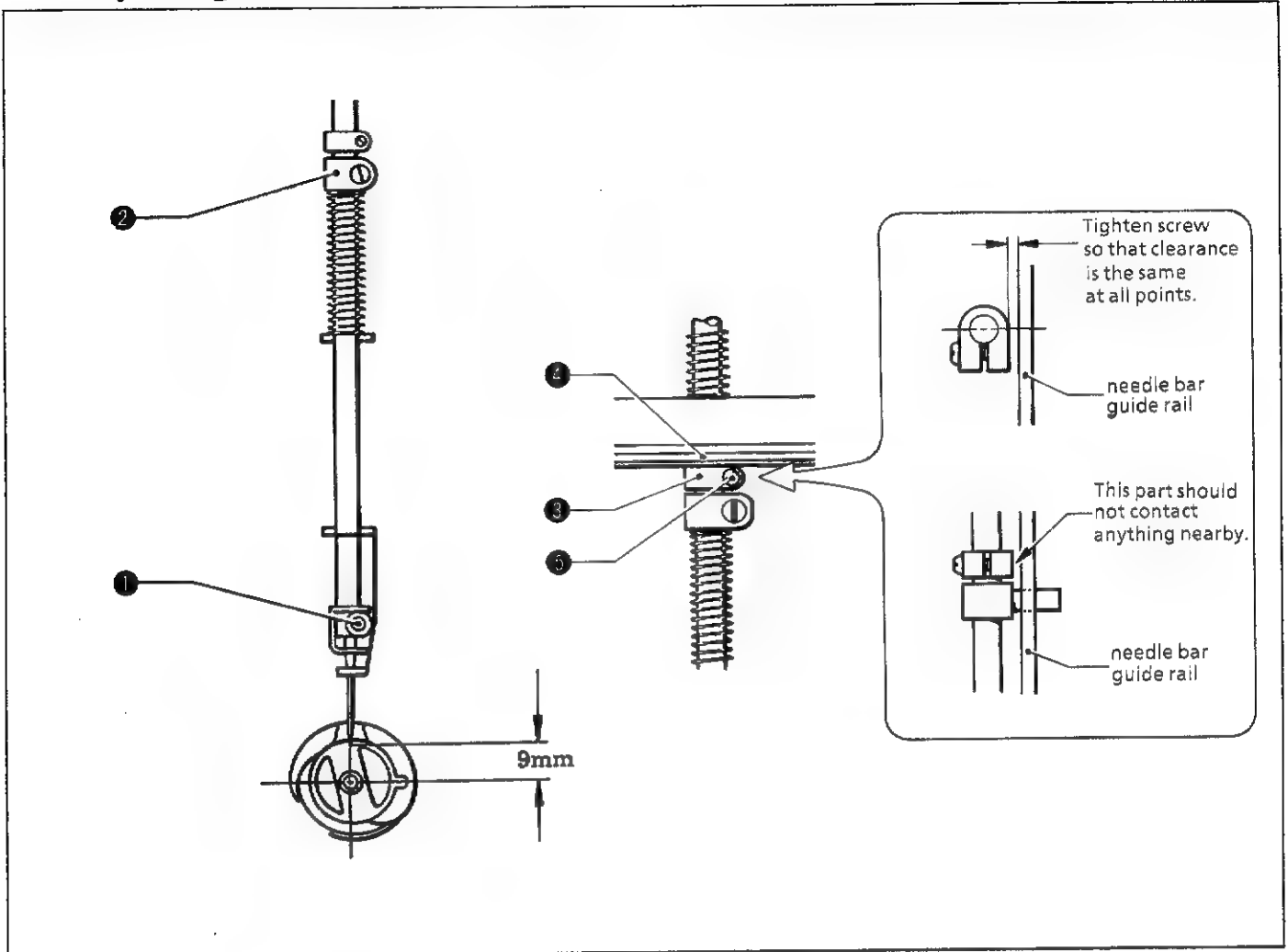
Keep the machine clean:

Remove dirt with a soft, dry cloth. If necessary, clean with the detergent-soaked cloth, then wipe off the detergent with a cloth dampened with (hot) water.

Caution:

Do not clean with benzene, thinner, or other volatile solvents.

1 Adjusting needle bar height

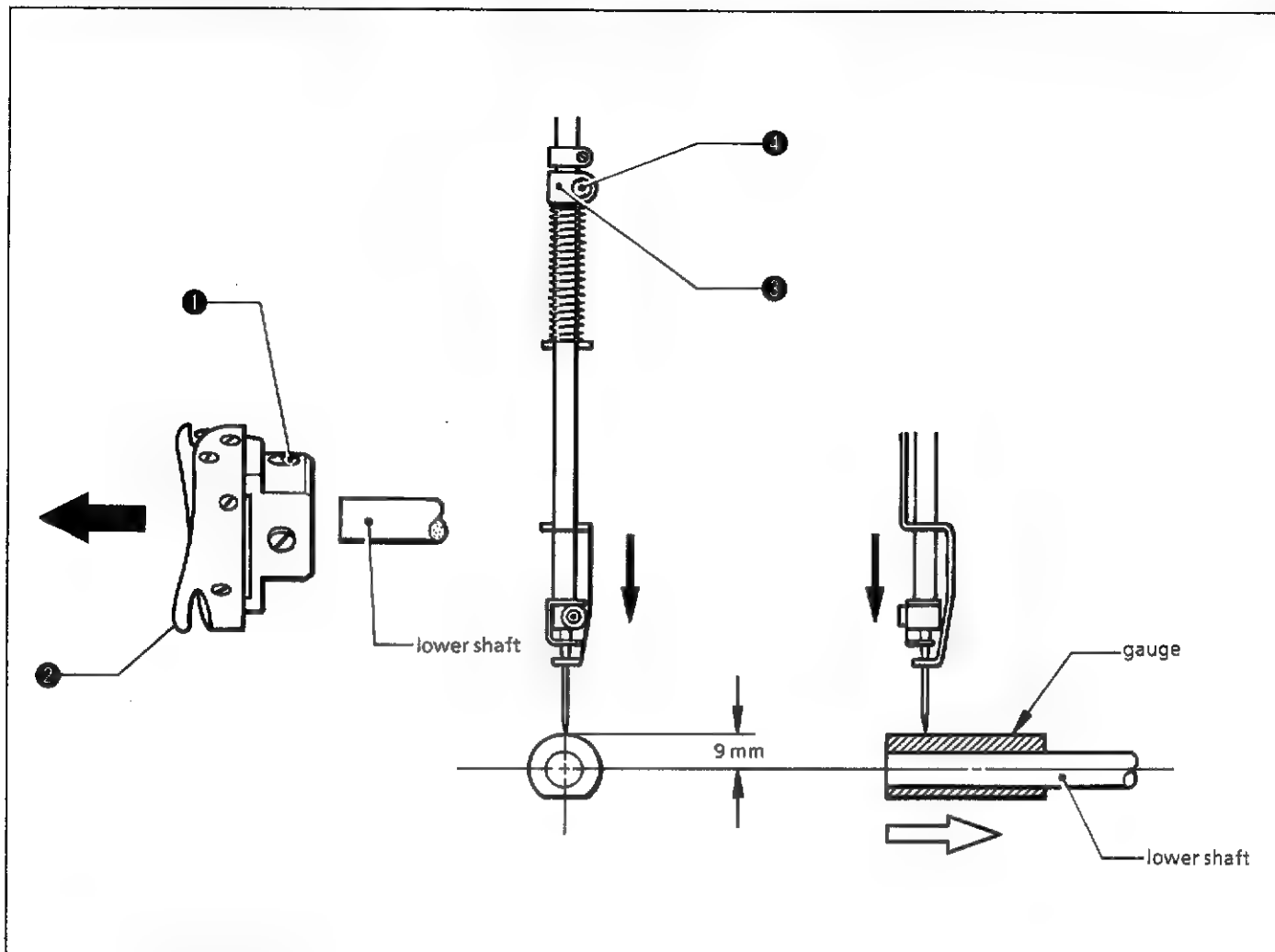


1) Lower the needle bar to its lowest position. When the needle tip is raised 9 mm above the center of the rotary hook shaft, tighten the screw of the needle bar clamp ② so that the screw ① leans to the right 25° - 30°.

2) Lower the needle bar to its lowest position. Lightly press the stopper ⑤ to the cushion rubber ④ side. Then tighten the screw ⑤ so that it is positioned in the front.

[NOTE] Make sure that the stopper does not strike the needle bar guide rail.

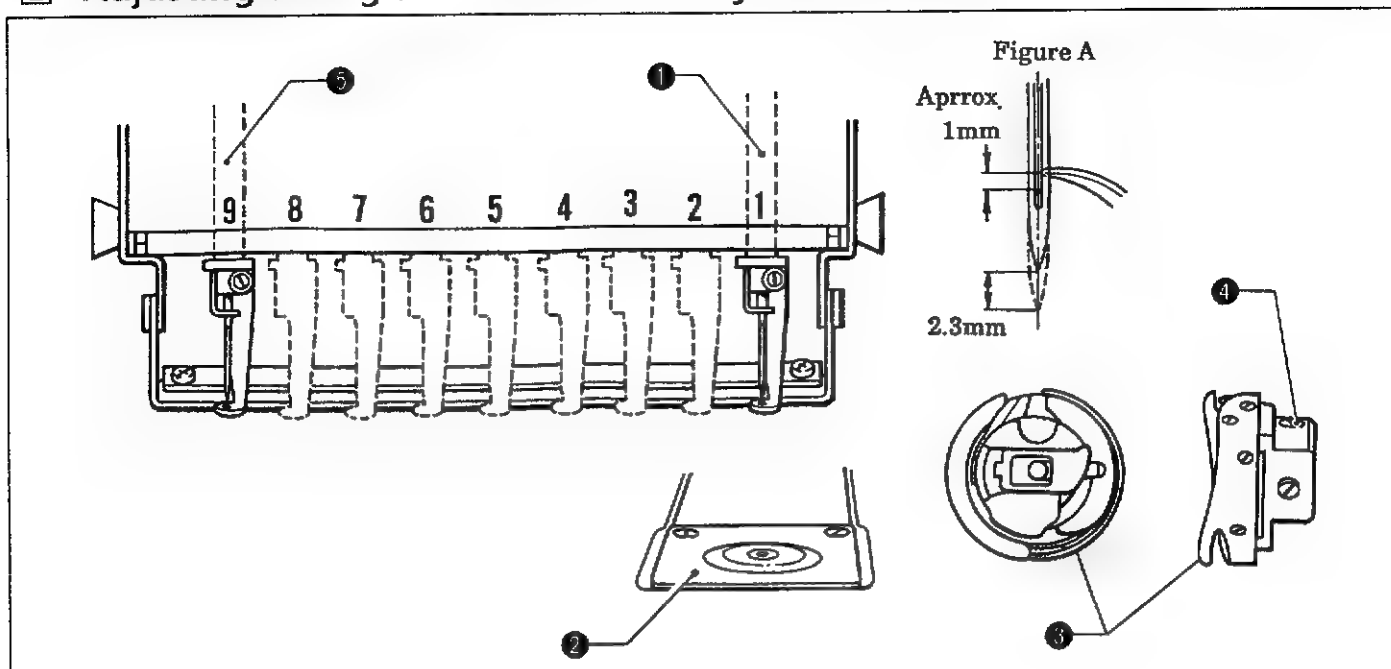
When using the gauge (optional)



- 1) Loosen the screw ① and remove the rotary hook ② from the lower shaft.
- 2) Insert the gauge (option) into the lower shaft.
- 3) Loosen the screw ④ of the needle bar clamp ③. Turn the pulley until the needle tip lightly contacts the gauge.
[NOTE] Do not use the flat part of the gauge at this time.
- 4) Tighten the screw ④ of the needle bar clamp ③ firmly.
[NOTE] Check the stopper adjustment procedure on page 11 again.

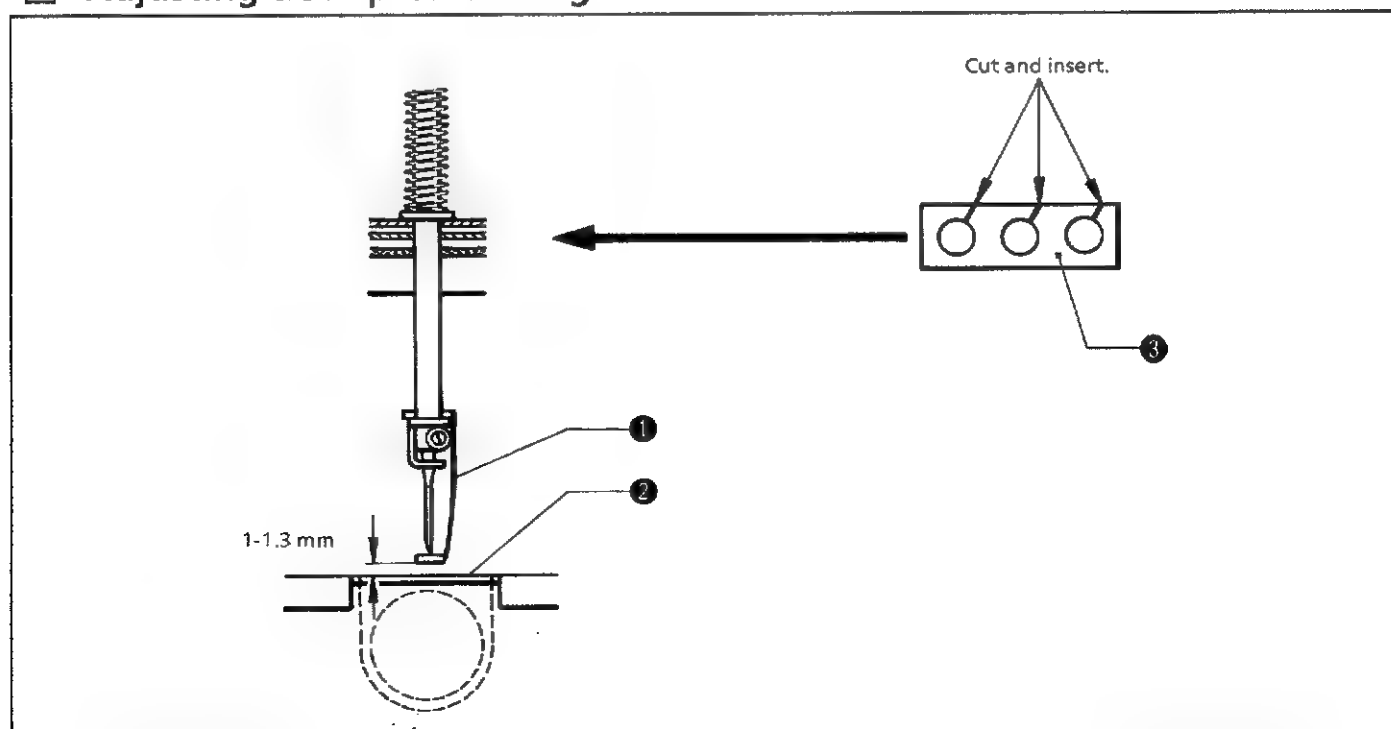
10 Standard adjustment (3)

② Adjusting timing of needle and rotary hook



- 1) Select the first needle bar ①.
- 2) Remove two screws and the needle plate ②.
- 3) When the needle bar is raised 2.3 mm (201°) above its lowest position (180°), loosen the screw ④ of the rotary hook ③, and adjust so that the needle meets the rotary hook point. Then, temporarily tighten the two stop screws.
At this time, the needle bar height should be about 1 mm. (Figure A)
- 4) Select the ninth needle bar ⑤. If the gap between the needle and rotary hook point is 0.01 - 0.2 mm, tighten the three screws of the rotary hook.

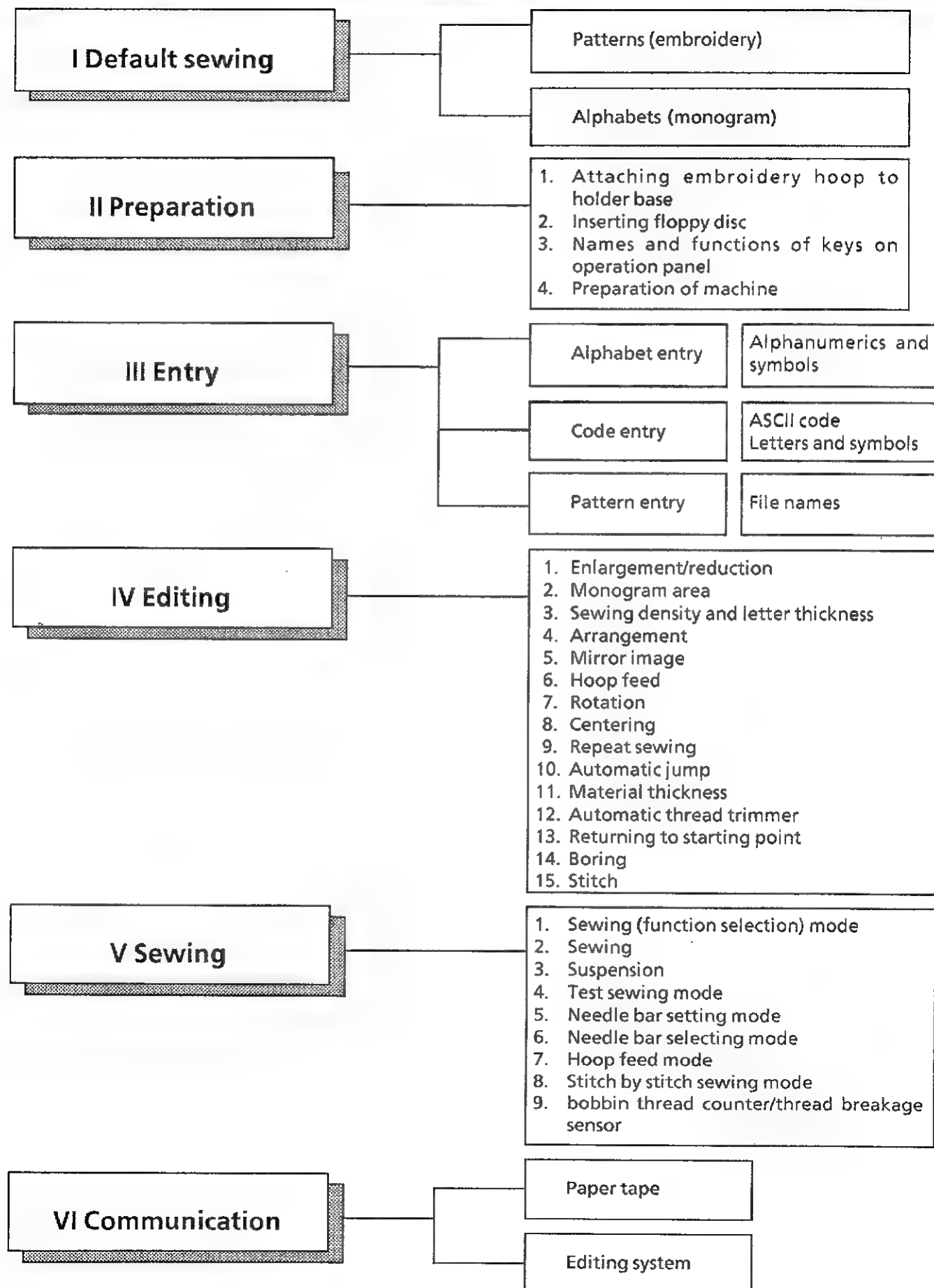
③ Adjusting cloth presser height



Adjust the cloth presser ① height with the cushion rubber ③. The cloth presser ① height should be raised 1 - 1.3 mm from the needle plate ② at the cloth presser's lowest position. (A sheet of the cushion rubber is 0.5 mm thick.)

CHAPTER 2 Sewing procedures

Flow chart



I | DEFAULT SEWING

1 | Default sewing of patterns (1)



To embroider the pattern above (four-colored, file name :STAFF) :

CAUTION MOVING !

1. Turn on the Power.

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

Main menu is displayed.

2. Insert the design floppy disc.

ENTER

3. Press the <ENTER> key to enter the data.

STYL: 01 /ALPHBT

[NOTE] Change the alphanumeric mode into the pattern mode in order to enter the pattern data.

PATTERN

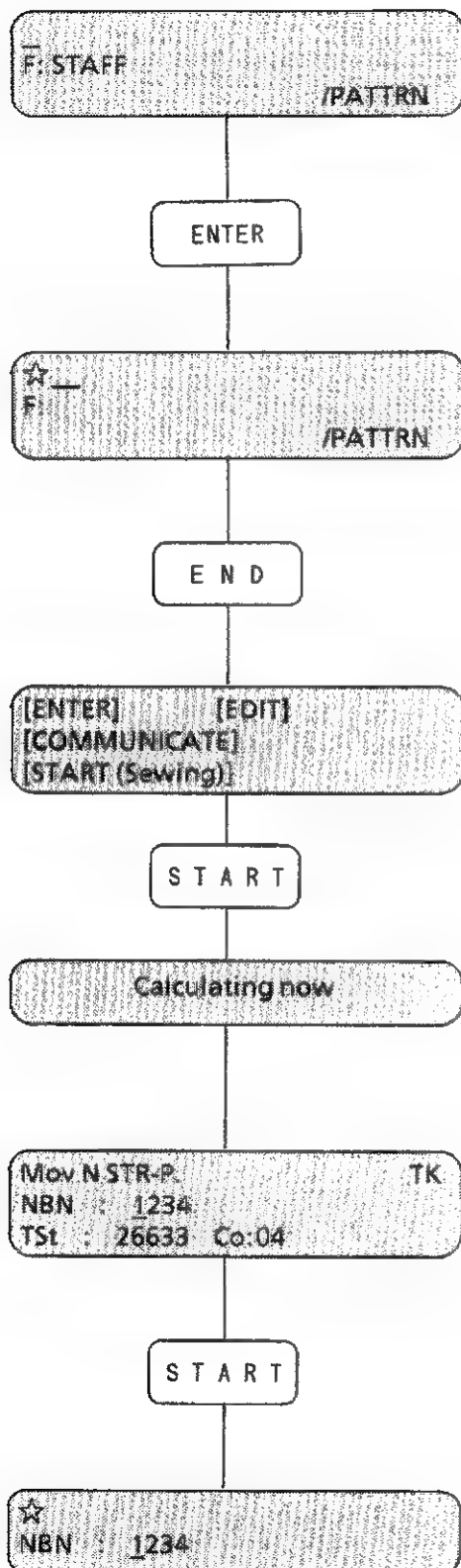
4. Press the < PATTERN > key twice .
The pattern mode is displayed .

F : /PATRN

S T A F F

5. Type the file name of the pattern " STAFF " with the alphabet key on the operation panel.

1 Default sewing of patterns (2)



6. The entered file name is displayed on the second row.

7. Press the < ENTER > key.

A message, " Reading now " is displayed on the third row, then after a while, a "☆" appears on the first row.

8. Press the < END > key to return to the main menu.

9. Press the < START > key to get into the sewing (function selection) mode.

10. Pressing the < START > key begins sewing.

The number on the LED indicators shown during sewing indicates the rotation of the sewing machine.

After needle number 1 sewing finishes, the next needle number is displayed.

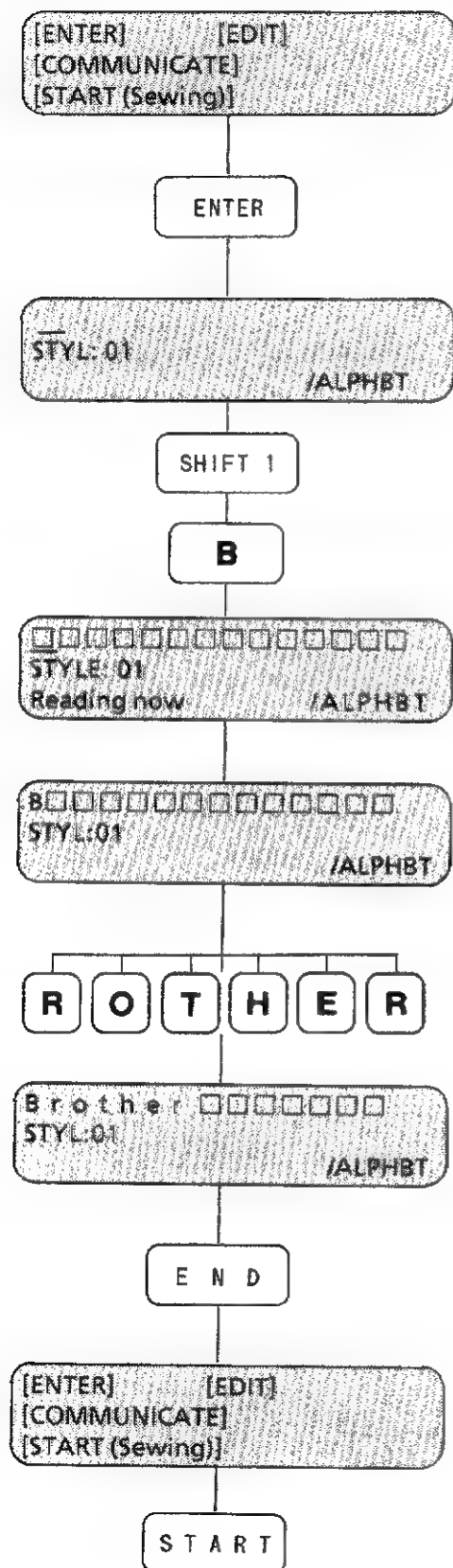
Mov N STR-P	TK
NBN : 1234	
TSt : 26633	Co:04

11. After sewing, return to the sewing (function selection) mode again.

In this part, sewing a pattern with four colors ends with the needles in correct numerical order. The needle numbers can be set arbitrarily.
Refer to "Sewing function " and " Needle bar setting".

2 Default sewing (1)

To embroider "Brother" in default:



1. Turn on the power. The main menu [ENTER], [EDIT], [COMMUNICATE], [START (SEWING)] will be displayed.

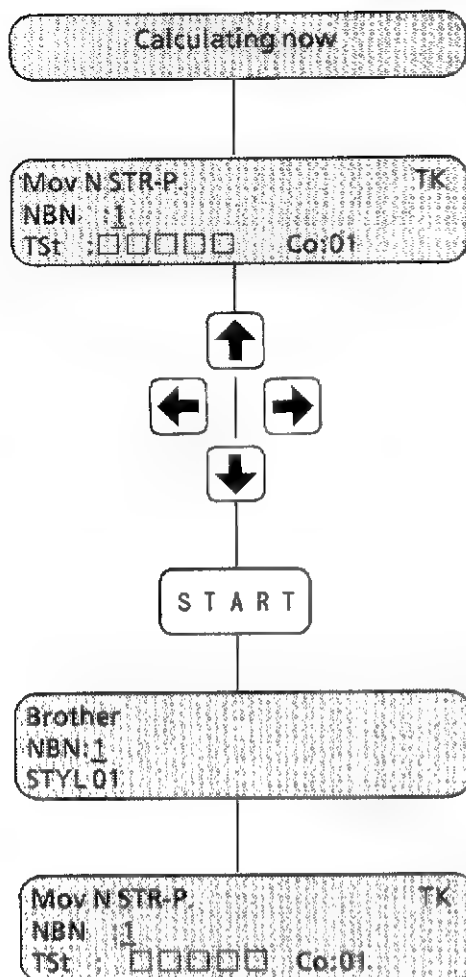
2. Press the <ENTER> key on the operation panel to enter the data.

3. Type "Brother".
 1) For a capital "B", press the <SHIFT 1> key, then press the key.
 2) Release the <SHIFT 1> key by pressing it twice. Then press the <R>, <O>, <T>, <H>, <E>, and <R> keys.

* The message <Reading now> will be displayed at the bottom of the operation panel. When all data of the seven letters is stored, the message will disappear.

4. Press the <END> key. The display will return to the main menu.

5. Press the <START> key for sewing.



6. Select the sewing position using the jog key.

7. Press the <START> key for sewing.

8. After sewing, the display will return to the sewing (function selection) mode again.

<The default settings in the editing mode>

Screen (1)

ARA: V 285 mm H 450 mm
 LNG: V ☐ ☐ ☐ mm H ☐ ☐ ☐ mm
 All : W 1.00 H 1.00

LNG(V = vertical H = horizontal)
 All (W = width, H = height)

Screen (2)

ROT = 000° MRR: J
 DNS = 1.0 THI = 1.0
 HOP: X 225 mm Y 142 mm

Screen (3)

RePT : H direc 1time
 SPC : 000 mm
 ATHC : ☐ St Hoop: Manu

Screen (4)

STR_R : On
 BORING : Off
 SHIFT : Off

Screen (5)

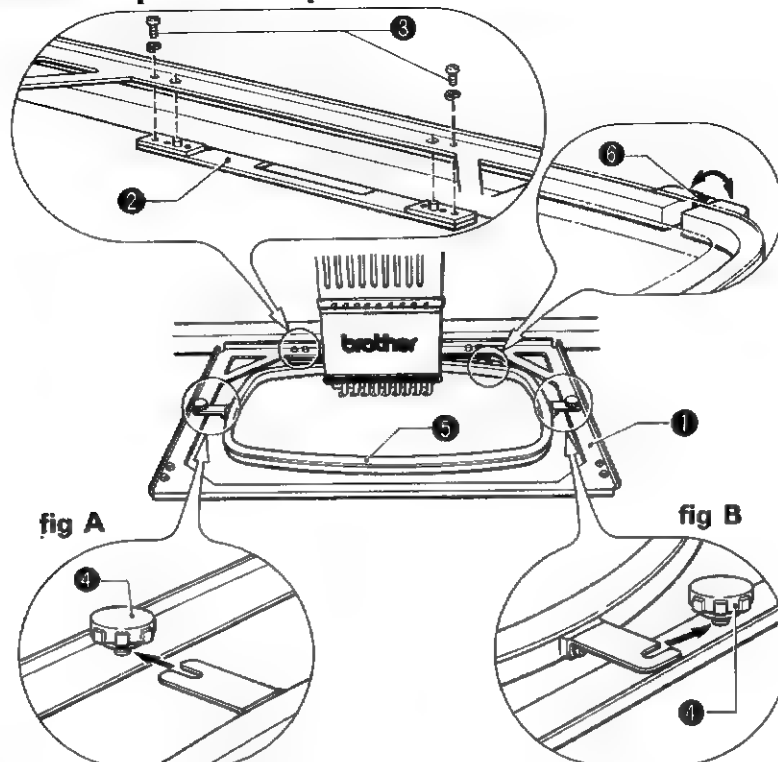
Satin
 Jump: STL 12.7 mm

NOTE: If the <AC> key is pressed when the editing menu is displayed, all the editing menu values except automatic thread trimming value will be reset to default.
 If the <*> key is pressed once, the above screens will be displayed in sequence.

II PREPARATION

1 Attaching embroidery hoop to holder base (1)

1 Attaching plastic square hoop to holder base

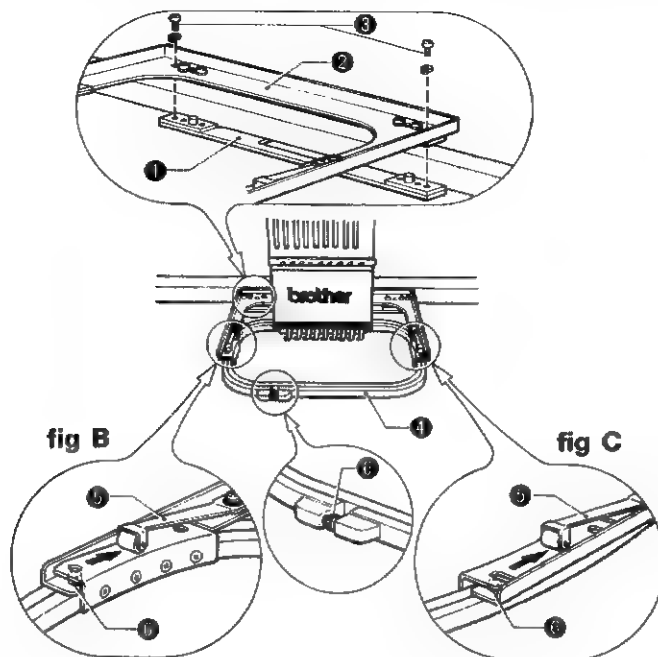


- 1) Attach the holder base ① to the X carriage ② and tighten the two screws ③. (Fit the protrusions of the X carriage in the holes that are closer to the center.)
- 2) Loosen the two screws ④ and set the plastic square hoop ⑤.
- 3) Fix the metal fittings on the left side of the hoop as shown in figure A, and fix the one on the right side of the hoop as shown in figure B. Secure the screws ④.
- 4) Improper setting of the material in the embroidery hoop may cause skipped stitches, thread breakage, or puckering. Use the screw ③ for adjustment.

1 Attaching embroidery hoop to holder base (2) (optional)

2 Attaching tubular square hoop to holder base

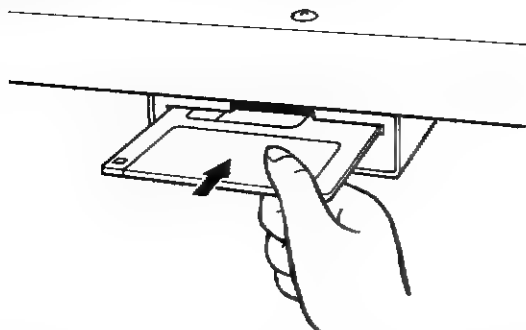
[NOTE] Before using the tubular square hoop and the holder base, remove table (C) of the embroidery machine.



- 1) Attach the tubular square frame ② to the X carriage ① with the two screws ③ as shown in figure A. (Fit the protrusions ⑤ of the X carriage in the holes that are closer to the center.)
- 2) Attach the metal fittings of the tubular square hoop ④ as shown in figures B and C. When attaching them, lift the plate spring roller ⑤ slightly and be sure to fit the protrusions ⑥ of the holder base in the holes of the frame.
- 3) Improper setting of the material in the embroidery hoop may cause skipped stitches, thread breakage or puckering. Use the screw ⑦ for adjustment.

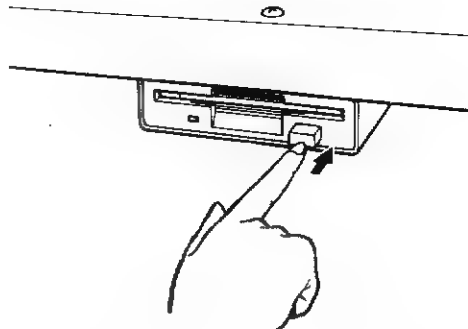
2 Inserting floppy disk

Inserting



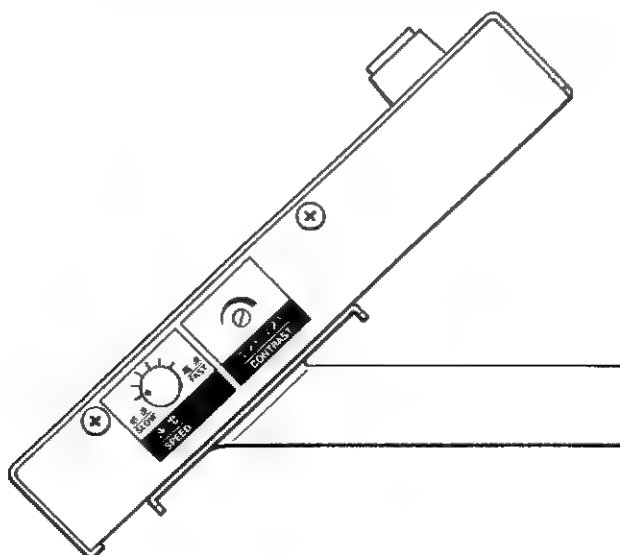
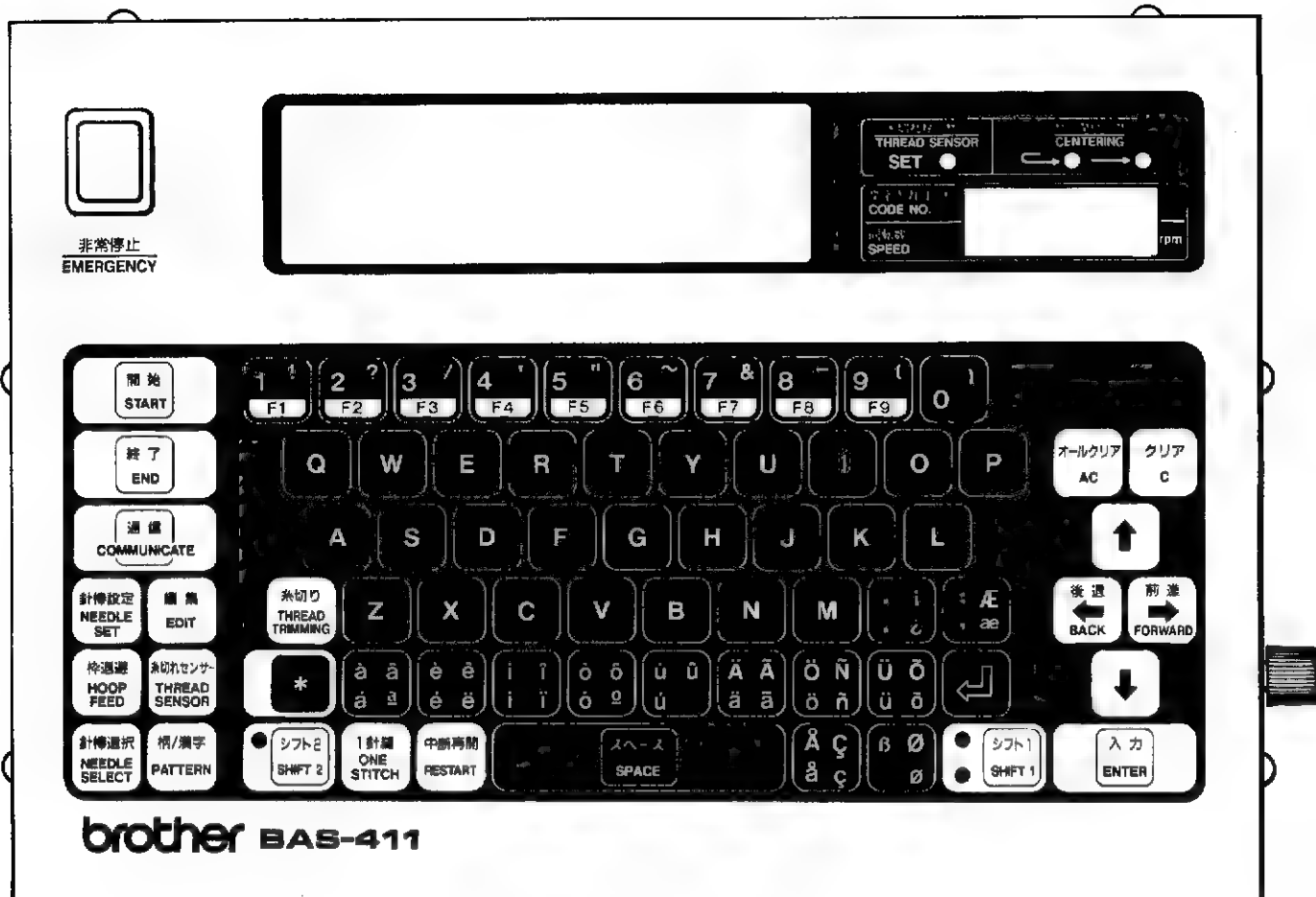
- [NOTE 1] If the floppy disk is not properly inserted, the data will not be read.
- [NOTE 2] Keep the floppy disk away from magnets and televisions, for the data on the disk can be damaged by magnetism.

Ejecting



Press the eject button to take out the floppy disk.
Do not eject the disk while the drive indicator is on.

3 Names and functions of keys on operation panel (1)

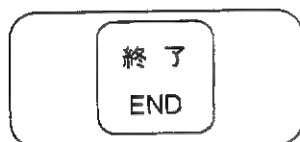


Main functions of keys on operation panel



Use this key to;

- Select <START> after data entry.
- Embroider the data stored in just the state it was in last embroidered.
- Start after the carriage moved to sewing start point.
- Restart in the sewing mode during suspension.



Use this key to;

- Clear the warning (needle thread breakage etc.).
- Finish needle setting.
- Exit from each menu in the editing mode and to exit from editing mode.



非常停止
EMERGENCY

Use this key to;

- Stop the machine during sewing.
- Clear the back-up memory when the power is turned on.



Use this key to;

- Convert the character code into character.
- Set the area, letter size, style number, letter thickness, sewing start point, etc.
- Receive data in the communication mode.
- Set the pause (suspension mark “*”) or release it after the needle bar exchange.
- * Because the pause and the color order function work together, the pause cannot be set without color order function.



Use this key to;

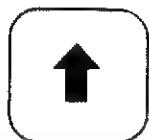
- Clear all the characters displayed in the data entry mode.
- Change the edit data into default.
- Cancel the sewing during suspension in the sewing mode.
- Set the color order to default in the needle bar setting mode.

3 Names and functions of keys on operation panel (3)



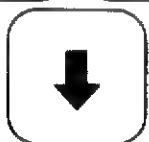
Use this key to;

- Delete the character on the cursor in the display
- Delete the characters one-by-one on the cursor while keeping set value.
- Cancel one cycle of repeat in sewing mode.



Use this key to;

- Move carriage at the beginning of sewing in any direction.
- Move cursor in the display forward and backward
- Restart forward and backward movement after thread breakage. (either stitch by stitch or every 100 stitches)
- Select color order in needle bar setting.



Use this key to;

- Enter communication mode and communicate with editing system or paper tape reader through communication line.



Use this key to;

- Edit after data entry.
- Select function out of the editing menu by the numeric key.
- * In editing mode, BAS-411 can edit only brother data format (block data format). No other data format is available.

針棒設定
NEEDLE
SET

Use this key to set needle order when setting sewing start point and during suspension.

- * The maximum number of needle changes is 99.

糸切れセンサー
THREAD
SENSOR

Use this key to;

- Switch ON/OFF of thread breakage detector.
- Set the bobbin thread counter value.
- Switch ON/OFF of the bobbin thread counter.
- See the value on the stitch number counter.

- * This key is available in sewing (function selection) mode.

枠退避
HOOP
FEED

Use this key to move X and Y carriages to attach or remove hoop or to superimpose material.

- * Only one hoop feed position can be set per embroidery cycle.
The hoop feed position can be changed during sewing.
This key is available when the machine is standing by or in suspension.

針棒選択
NEEDLE
SELECT

Use this key to move the needles manually, not related to the needle order.

This key is available during main menu mode, entry mode, editing mode, suspension and when the machine is standing by.

- * Using this key does not change needle order. Therefore, when the sewing is begun, the needle that is set in the established needle order returns to needle hole.
- * Press the needle number (<1> - <9> key) to replace the needle manually.

[NOTE] This key is not available during sewing mode.



Use this key to trim manually.

This key is available when;

- In main menu mode.
- Setting sewing start point.
- The machine is standing by or suspended.



Use this key to;

- Display and check current editing data
- Sew on the mask line of character or pattern without thread when the machine is standing by prior to sewing.
- Switch forward and backward movement of the needle from stitch by stitch to 100 stitches at a time. (when the machine is stopped during sewing.)
- Set color change command to change color in data entry mode.

[NOTE] Color change command can be set between patterns or between characters. Color change commands cannot be set during one pattern or one character.

When color change command is set, a "*" is displayed indicating the position of the command.

"*" cannot be inserted into received pattern data received in the communication mode.



Use this key to sew stitch by stitch in suspension or when the machine is standing by.



Use this key if the power is cut off during sewing in order to restart the machine for the rest of embroidery.

[NOTE] When the power is on and the rest of data of last embroidery is stored, the X and Y carriages return to its home position and then move to the point where the embroidery was stopped and the machine suspends. But, if the power is turned off during suspension and then turned on, the machine will work as described above without the function of this key.

The message displayed this time is the same as the one during suspension. Continue the rest of embroidery by pressing the <START> key.

If the data back up is lost, pressing the <RESTART> key will be a misoperation.

Alphanumeric and symbol keys



~



- Use this key to;
- Enter number and pattern.
 - Select menu.



~

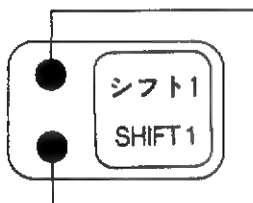


- Use this key to;
- Enter characters in alphanumeric mode.
 - Enter 1-8 digit(s) code numbers (file name) in pattern mode.



Use this key to switch pattern mode, alphanumeric mode and code entry mode.

Up to 4 characters are allocated to each key and selected by the <SHIFT 1> and <SHIFT 2> keys.



When shift 1(upper) indicator is lit; symbols, capital standard and European letters (on upper right) are available.

When shift 1(lower) indicator is lit; numbers, capital standard and European letters (on lower right) are available.



When shift 2 indicator is lit; numbers, capital standard and European letters (on upper left) are available.

If neither shift key is lit; numbers, small standard and European letters (on lower left) are available.



Use this key to leave a space between patterns. One space makes ■ 10 mm interval.



Operating procedure, data code number, letters entered, editing data and error messages are shown on the 3-line, 15-letter display.



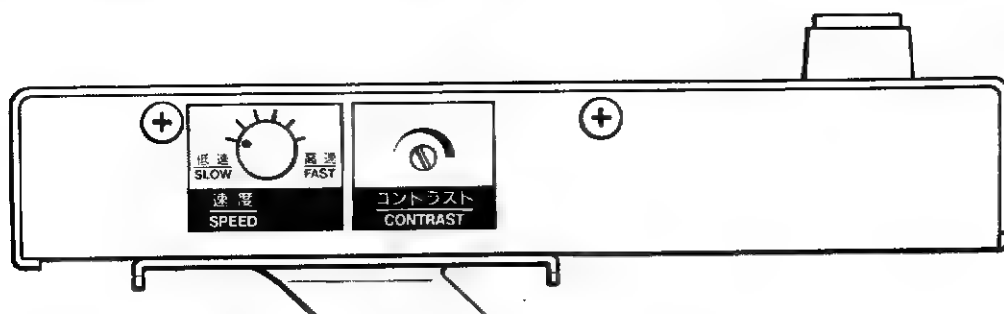
This indicator is lit when the thread breakage detector is working.



This indicator is lit when centering is selected.



ASCII code, code number (in entry mode), sewing speed (rotation) is displayed.



The speed dial is used to select one of the 6 sewing speeds, according to the chart below.

The levels are set according to the stitch length. (not changeable)

range \ stitch length	0.1 - 4.8	4.9 - 8.2	8.3 - 12.7
1	1000rpm	650	450
2	750	600	450
3	650	550	450
4	550	500	450
5	500	450	400
6	350	350	350



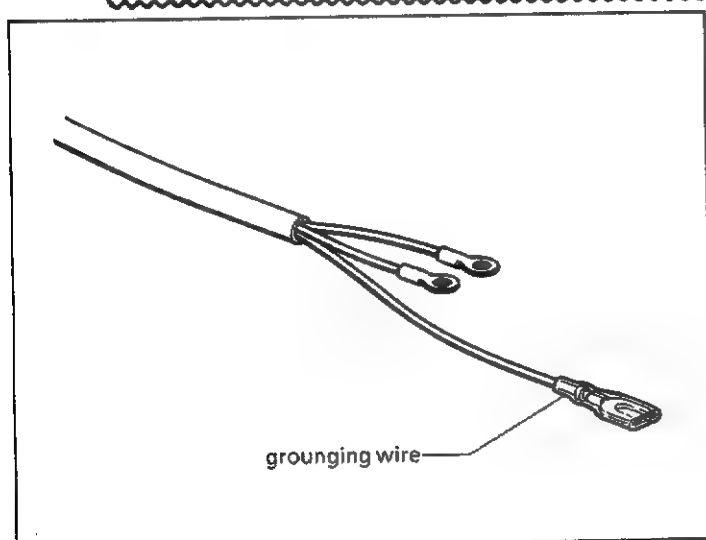
The contrast dial of liquid crystal display is used to adjust the darkness of the display.

1 Check the following before switching on the machine

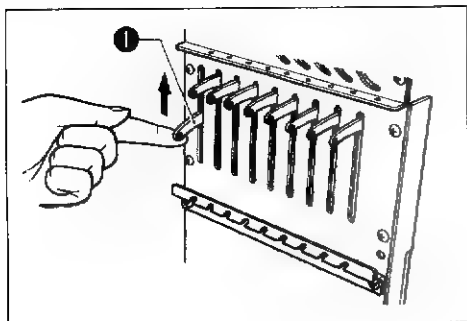
1. THREAD	2. EMBROIDERY HOOP	3. NEEDLE THREAD POSITION
① Threading is proper? ② The needle is threaded? ③ The bobbin thread is set? ④ The needle thread is set?	① The embroidery hoop securely clamps? ② The embroidery hoop increases the tension of the material?	① The needle thread take-ups form a line? ② The needle bar is at its highest position?

When the power switch is on, the message, "CAUTION MOVING!" is displayed and the buzzer sounds 'beep'. Then, the embroidery hoop automatically moves to the center of the X and Y carriages. At this time, check that there is nothing on the hoop which runs against the point of the needle or the presser foot.

[NOTE] When the power supply cord is connected, be sure to connect the grounding wire as illustrated in the figure below.



② When turning on the power of the machine



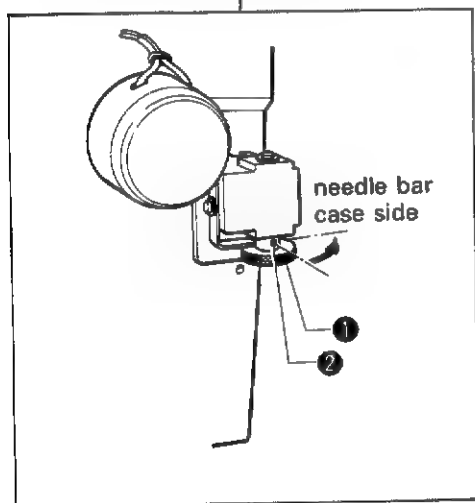
[NOTE] When the needle bar and the pulley are not in the stop position or if even one of the needle thread take-ups is not in line, lift the needle thread take-up with a finger.

The needle thread take-ups form a line by the movement of the stopper.

1. If the following are displayed

(1)

N. Case POS ERR
Set NC in order

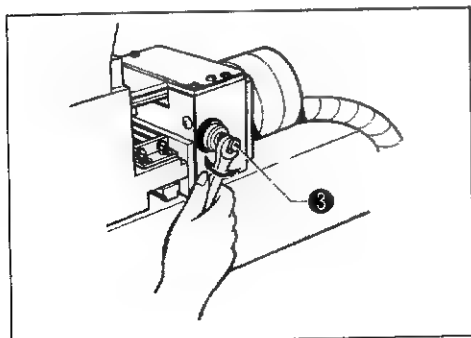


This message shows that the needle bar case is not aligned with the needle hole of the needle plate. The machine cannot operate if this occurs.

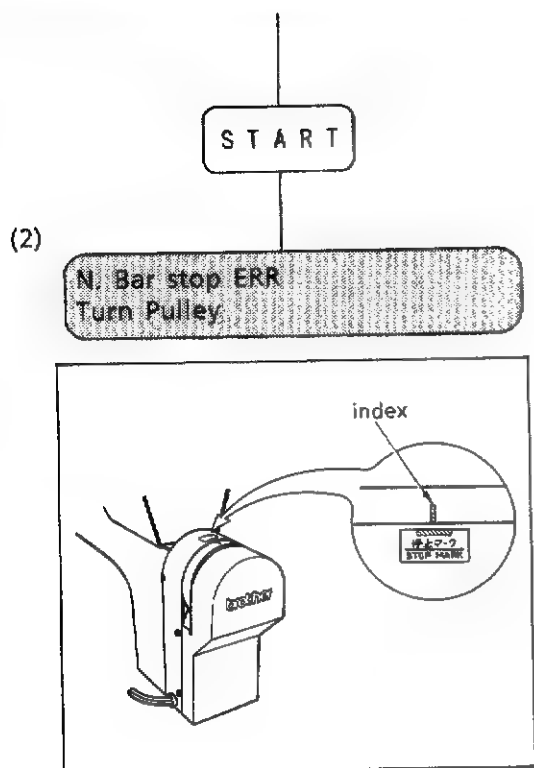
1. First of all, check that the needle bar stop position is correct.

When the red mark ② of the clutch knurl ① is on the side of the needle bar case, it is in the automatic jump condition. This is the normal position.

2. Turn the shaft ③ slowly.
If it is unusually heavy or does not turn, the needle thread take-up ① or the needle bar is not in the proper position. Check again and adjust it.
[NOTE] Do not turn the shaft forcefully.



3. When the needle bar case comes to the proper position, in the middle of the undetected area where the needle bar case does not move although the shaft ③ is turned, the buzzer sounds 'beep' and the messages, "CAUTION MOVING!" and "Press START key" are alternately displayed.

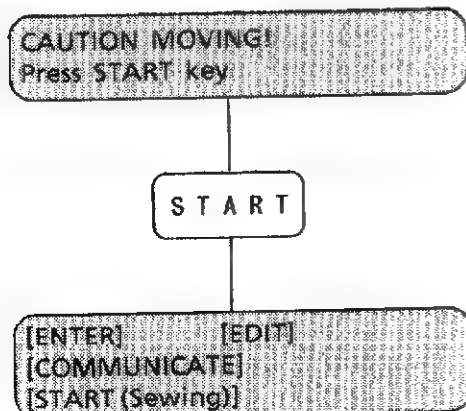


4. Press the <START> key.

The needle bar is not in the proper position. Under this condition, it is impossible to move the needle bar to the proper position.

When the needle bar stop position is not proper :

1. Align the pulley index to the stop position.



2. When the needle bar case comes to the proper position, the buzzer sounds 'beep', and the messages, "CAUTION MOVING!" and "Press START key" are alternately displayed.

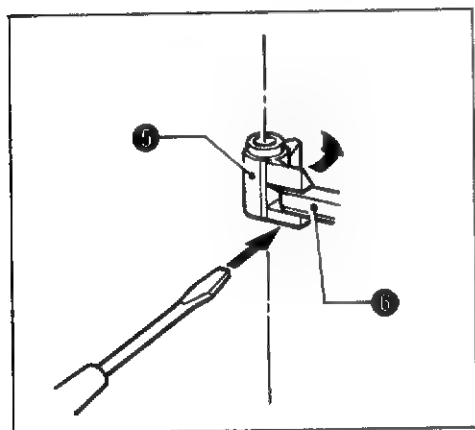
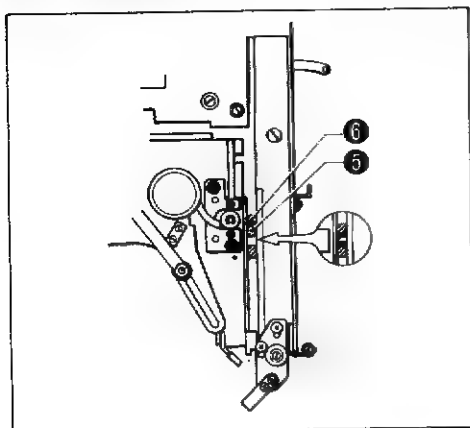
[NOTE] Check that the needle bar does not go down.
If it does, set the needle bar in the proper needle bar stop position.

3. Press the <START> key.

The X and Y carriages move automatically to the home position of the embroidery area.

4. The main menu is displayed.

The proper needle bar stop position



Looking into the inside from the gap, each needle bar is in the jump condition and at its highest point as in the left figure, the needle bar elevating block ⑤ is below so as not to run against the needle clamp ⑥.

All the needle thread take-ups are in a horizontal line.

[NOTE] Check that the needle bar stop position is proper when turning on the power and when reopening to sew during standstill or pause.

- (1) The needle thread take-ups should form a horizontal line.
- (2) All the needle bars, including the needle bar in the sewing position, should line up at the highest position.

If the needle bar in the sewing position is down, it must be disengaged from the needle bar elevating block ⑤ and returned to the highest position. To separate them, insert a screw driver in the gap according to the diagram, then push and rotate.

Once separated, the needle bar moves to the highest point by a spring.

2. If the X and Y carriages operate unusually (Clearing and resetting memory)

1. When turning on the power not during restarting, the X and Y carriages move to an abnormal position after returning to the home position (the center of the embroidery area).
2. After having exchanged the P-ROM on the main printed circuit board of the machine. (The power switch should be off in exchanging.)

[Procedures in clearing and and resetting memory]

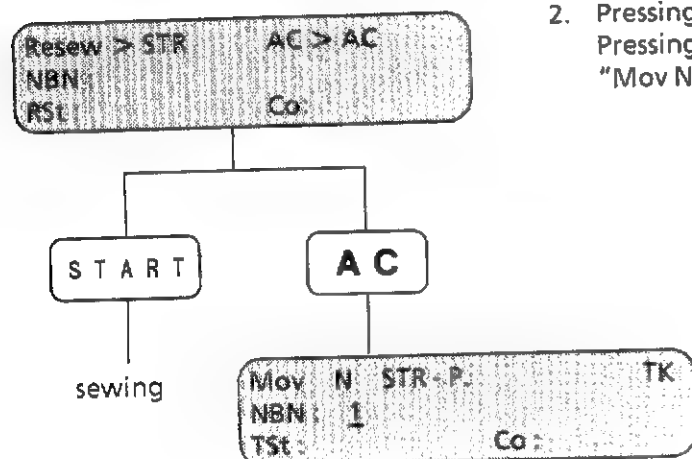
1. Turn off the power.
2. While pressing the <EMERGENCY> key, turn on the power. Keep on pressing the <EMERGENCY> key. Do not release it.
3. After the message, "CAUTION MOVING!" is displayed, the X and Y carriages start to return to the home position or another message, "Turn Pulley" and so on, is displayed. Release the <EMERGENCY> key after that.
4. The inside memory storage is reset. The X and Y carriages return to the ordinary operation after turning on the power.

3. Restarting

In the following cases, the message will be displayed and sewing can be resumed.
When the power of the machine is cut off because of a power cut during sewing, or if the power switch is turned on after having been turned off during suspension or sewing:

- (1) Turning off the power : When the machine is suspended during sewing.
After the <EMERGENCY> key has been pressed.
When the machine is automatically suspended because of needle thread breakage, and so on.

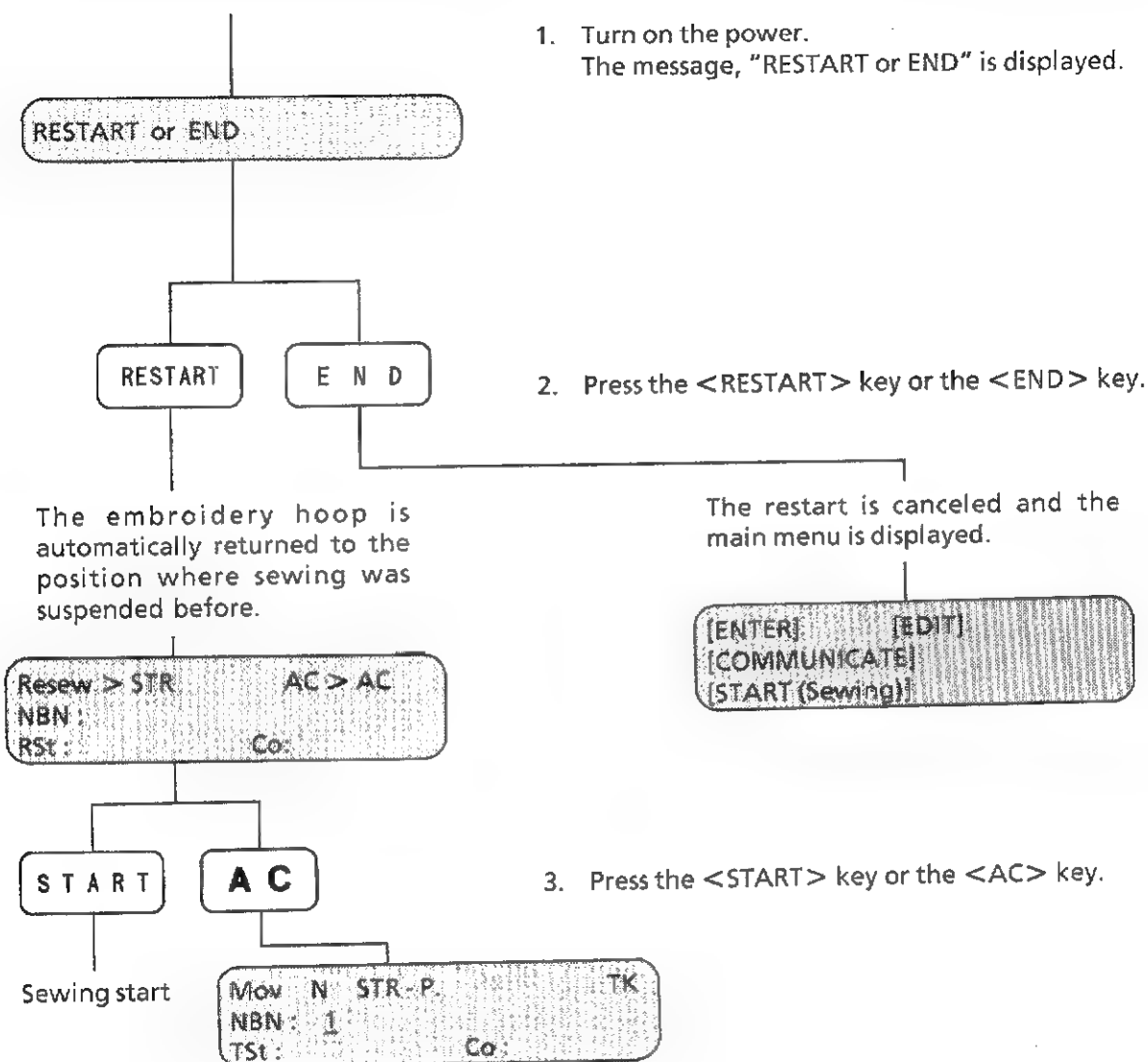
1. Turn on the power.
The embroidery hoop is automatically returned to the position where sewing was suspended before and the machine suspends.



2. Pressing the <START> key will start sewing.
Pressing the <AC> key will cancel sewing. The message, "Mov N STR-P. TK" will be displayed.

4 Preparation of machine (6)

(2) In case the power of the machine was cut off because of a power loss



[NOTE] In (1) and (2), if more than a day passed with the power off, the memory will be erased and the restart cannot be done.
Turning on the power will display the main menu.

III ENTRY

Summary of main menu

The main menu

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

This main menu is displayed at the completion of each step.

The function of each item in the main menu

- [ENTER] Pressing the <ENTER> key will introduce the mode for entering the data of the letters and patterns.
- [EDIT] Pressing the <EDIT> key will open the mode for editing the data --- arrangement, enlargement and reduction.
- [COMMUNICATE] Pressing the <COMMUNICATE> key will enable the system to start receiving the data from the editing system (optional) and the paper tape reader (optional).
- [START (Sewing)] Pressing the <START > key will begin the sewing mode.

When the main menu is displayed, the following modes can be selected using these keys.

- [NEEDLE SELECT] The needle can be replaced manually regardless of the setting in the NEEDLE SET mode.



- Pressing the JOG key will move the hoop position.

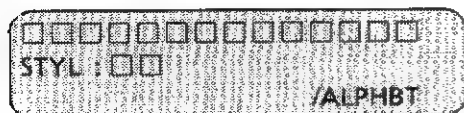
- [NEEDLE SET] Pressing the <NEEDLE SET> key will enter the NEEDLE SET mode.

- [THREAD SENSOR] Pressing the <THREAD SENSOR> key will:
switch ON/OFF of thread breakage detector.
set the bobbin thread counter value.
switch ON/OFF of the bobbin thread counter.
see the value on the stitch number counter.
* This key is available in sewing (function selection) mode.
- [THREAD TRIMMING] ... Pressing the <THREAD TRIMMING> key will perform thread trimming.
- [0] Pressing the <0> key will enter the test mode.

[NOTE] While above keys are available, they are not displayed in the main menu.










1. When the alphanumeric mode is displayed, the alphanumerics and the symbols can be entered directly from the operation panel.



(This mode is used for entering the alphabet from the floppy disk.)





This is displayed in default.

The available keys on this display are:

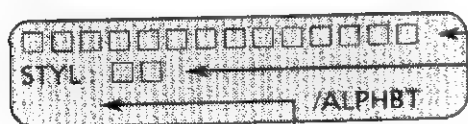
Available key	Function
Alphanumeric and Symbol keys	To type all letters To type only style number
 	To move cursor from side to side
 	To switch entry mode (letter entry & style number) [NOTE 1]
	To clear all data [NOTE 2]
	To delete letters on cursor
	To change style number of stored letter (style number entry mode) [NOTE 3]
	To change entry modes (alphabet mode, code mode, pattern mode)
	To end entry mode

[NOTE 1] Changing the style number can be made by typing a number with two-digits while the cursor appears on the second row by pressing the  key. Press the  key in returning to the letter entry mode again. At this time, the cursor on the second row will disappear.

[NOTE 2] Note that all set values are cleared. (Refer to page 20.)

[NOTE 3] To change the style number of the stored letter, press the  key to display the cursor on the second row. After entering the style number with a two-digit number, press the  key. Only a letter on the cursor can be changed.

2. Description of each setting item





The stored letters are displayed.

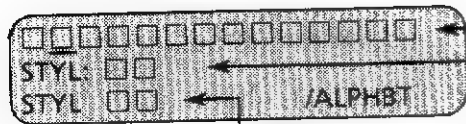
(If the data of the stored letter does not exist in the floppy disk, its letter is highlighted.) [NOTE 4]

The style number to store the letters is displayed.

Moving the cursor under the stored letter, the style number of the letter is displayed.

[NOTE 4] If there is a highlighted letter among the displayed letters in the first row, the display will not exit from the alphabet mode. Moving the cursor in the first row under the highlighted letter, delete the highlighted letter by using the  key, or after deleting it by using the  key, enter the letter with another style number again.

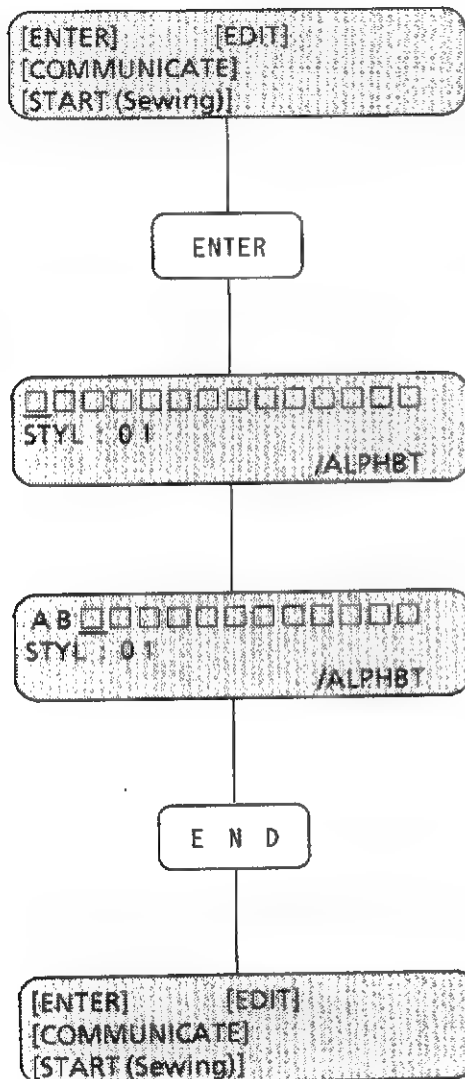
3. Changing the style number of the pre-stored letter



1. Move the cursor under the letter to be changed.
2. While the cursor is displayed on the second row by pressing the < [1] > key, type the style number and press the < ENTER > key.
3. The style number of the letter on the cursor on the first row has replaced the previous style number.
4. The new style number appears on the third row. At this time, the cursor on the first row stays as it is. It does not move automatically.

4. To type the letters of AB in practice

There are 28 styles available including block letters, script, old English letters, italics in the alphabet (capital and lower case) and numbers. The alphabet and the numbers can be entered directly from the key board on the operation panel.



1. Press the <ENTER> key.

2. When entering a capital letter, light the <SHIFT 1> key (upper) or (lower), or the <SHIFT 2> key to enter. Pressing the <A> key and the key will input the letters directly. The AB is stored.

3. Press the <END> key.

4. Return to the main menu.

5. Pressing the <START> key will start sewing.

5. Selecting alphabet style

Different styles can be selected prior to entering the alphabet (capital and small) and the numbers.
Examples of four styles of embroidering A B

AB	<i>AB</i>	A B	<i>AB</i>
Style 01 Block letters	Style 02 Script	Style 03 Old English letters	Style 04 Italics

[NOTE] In addition to these, there are 24 styles available.

Embroider the letters

AB

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

In the main menu

ENTER

STYL: 01 /ALPHBT



STYL: 01 /ALPHBT

0

2

STYL: 02 /ALPHBT



STYL: 02 /ALPHBT

1. Press the <ENTER> key.
The style number 01 is displayed.
[NOTE 1] In default, the style number 01 is displayed.
[NOTE 2] Select the style number with a two-digit number.
2. In changing the style number, press the <↑> key to display the cursor in the second row, select the style number 02.
3. Press the <0> key and the <2> key.
4. Press the <↑> key. When entering the capital AB, light the <SHIFT 1> key (upper) or (lower), or the <SHIFT 2> key to enter in turn.

A

5. Press the <A> key.
The message, "Reading now" is displayed in the third row.

A	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
STYL : 0 2															
/ALPHBT															

B

6. Press the key.

AB	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
STYL : 0 2															
/ALPHBT															

- [NOTE 3] At this time, to check the style number of the entered letter, move the cursor under it by pressing the jog key.



AB	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
STYL : 0 2																
STYL	0	2	/ALPHBT													

This is the style number of the letter on the cursor in the first row.

E N D

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

[NOTE 4]

□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
STYL	□	□	/ALPHBT													
STYL	□	□														

The style number in the second row shows the style number of the letter to be typed .

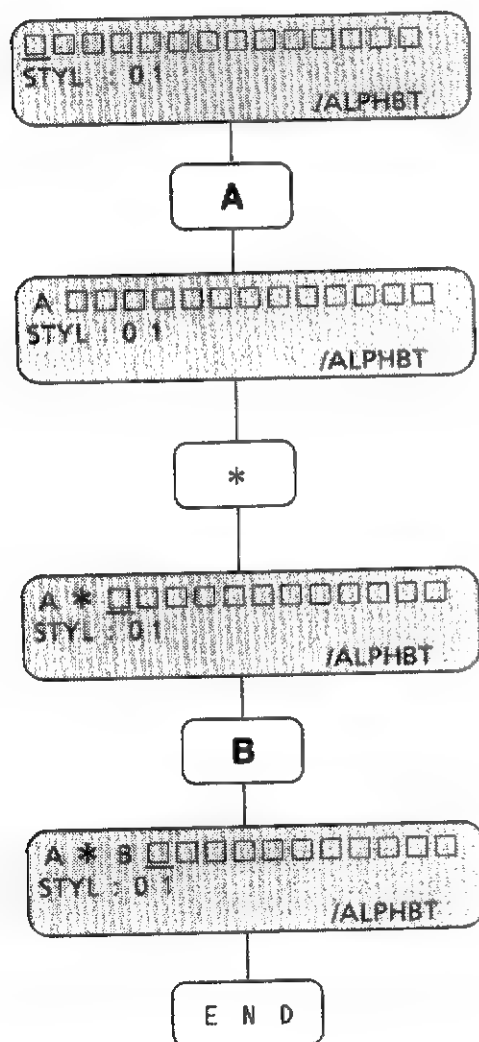
The style number in the third row shows the style number of the letter on the cursor.

1. Setting color change

The color change can be selected for every letter or pattern by entering the color change code in entry mode.

Select the alphabet mode or the code mode when setting color change.

About ■ method of entering color change in alphabet mode



1. When entering a capital letter, light the <SHIFT 1> key (upper) or (lower), or the <SHIFT 2> key, pressing and entering the <A> key.

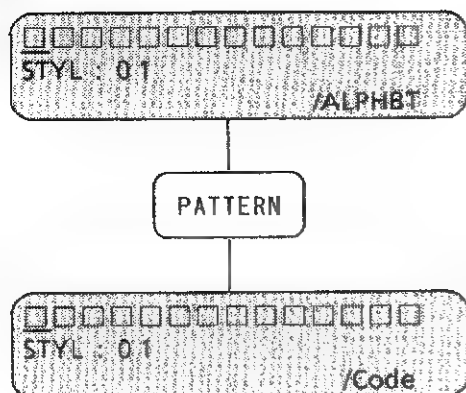
2. Press the <*> key to indicate color change. The color-change code is entered and the mark, "*" which shows the color-change code, is displayed.

3. Press the key on the key board to enter the letter B.

4. Pressing the <END> key will return to the main menu.

If embroidering is done in the above setting, the color change will be automatically made from A to B, sewing continuously.

In case of entering in the code entry mode, press the <PATTERN> key to select the code entry mode.



By pressing the <PATTERN> key, the code entry mode will be displayed.

While this is displayed, it may be used in entering the alphabet by code number from the floppy disc.

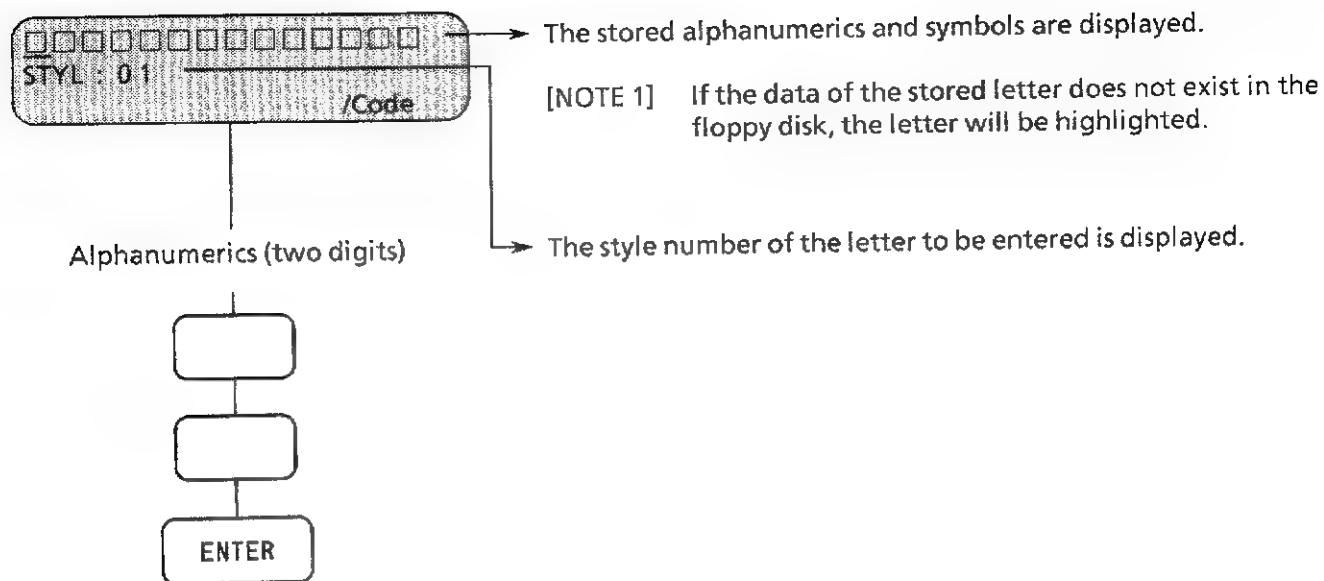
[NOTE 1] The alphabet should be entered as a two-digit ASCII code.

Refer to the ALPHABET 28 TYPES CORRESPONDING LIST.

The available keys on this display are:

Available key	Function
Number key	To type ASCII code (using numerics and A, B, C, D, E, F) to type style number
← →	To move cursor from side to side
↑ ↓	To switch entry mode (ASCII code ↔ style number)
AC	To clear all data [NOTE 2]
C	To delete character on cursor (In ASCII code mode, to delete 7SEG when 7SEG is displayed.)
ENTER	To store letters
PATTERN	To change entry modes (alphabet mode, code entry mode, pattern mode)
END	To end entry mode

[NOTE 2] Note that all set values are cleared. (Refer to page 20.)



About [NOTE 1]

If the highlighted letter among the displayed letters is in the first row, the display will not exit from the code entry mode.

If the highlighted letter remains, there is no data for the letter. Move the cursor in the first row under the highlighted letter and delete the letter by pressing the <CLEAR> key.

There are 28 styles of the alphabet, including European letters available in the floppy disc included with the machine.

Select the style to enter as a two-digit character number code of the alphabet. (Refer to the ALPHABET 28 TYPES CORRESPONDING LIST.)

Embroider the letters

AB



In the main menu

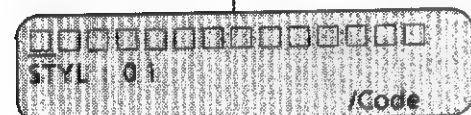
ENTER

1. Press the <ENTER> key.



2. Indicate the code entry mode by pressing the <PATTERN> key.

PATTERN



3. Type 41, the character code A.
The message, "Reading now" is displayed in the third row.

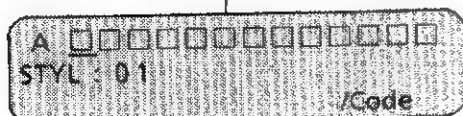
4

"41" is displayed.

1

ENTER

4. Press the <ENTER> key.

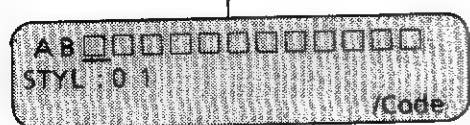


5. Type 42, the character code B.

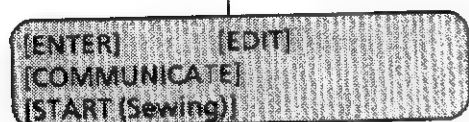
4

2

ENTER



E N D



"42" is displayed.

6. Press the <ENTER> key.

7. The AB with the style number 01 is stored.

8. Press the <END> key.

9. Return to the main menu.

[NOTE 1] Pressing the <A>, <E> and <F> keys are displayed by capital. Pressing the , <C> and <D> keys are displayed by small case.

[NOTE 2] If a highlighted letter is displayed, there is no data for the letter or the data is in another floppy disk.

[NOTE 3] If there is a highlighted letter, the display will not return to the main menu even if the <END> key is pressed. Either press the <CLEAR> key to erase the negative letter or insert another floppy disk and press the <END> key to get the correct data.

[NOTE 4] The alphabet and numbers, according to terms, can be embroidered up to 45 letters.

About a method of entering color change in code entry mode

□□□□□□□□□□□□
STYL : 0 1 /Code

4

1

ENTER

A □□□□□□□□□□□□
STYL : 0 1 /Code

2

A

ENTER

A * □□□□□□□□□□□□
STYL : 0 1 /Code

4

2

ENTER

A * B □□□□□□□□□□□□
STYL : 0 1 /Code

E N D

1. Type the character code A, 41, on the key board.

2. Press the <ENTER> key.
"41" will disappear leaving "A" on the display.

3. To indicate a color change, type the code, 2A, on the key board.
"*" is displayed in the first row. This shows that the color change code has been entered.

4. Next, type the character code B, 42 on the key board.

5. Press the <ENTER> key.
"42" will disappear to show B on the display.

If embroidering is done in the above-setting, the color change will be automatically made from A to B, sewing continuously.

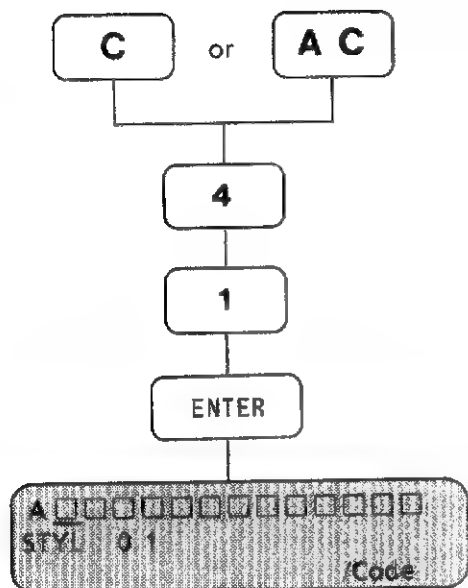
6. Pressing the <END> key will return to the main menu.

5 Correcting letter (1)

Letters can be changed after entering the character code.

Ex.

When having entered the character code number of A, not "41", but "44" by mistake

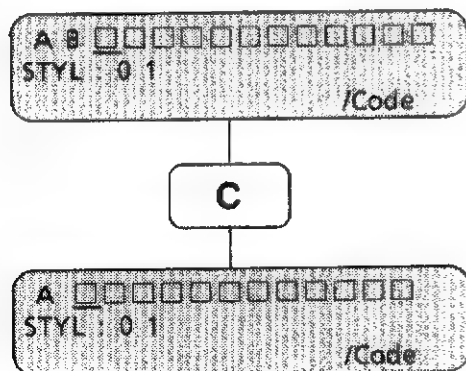


1. Press the <CLEAR> key or the <AC> key.
"43" disappears.
2. Press the character code of the A, 41 correctly.
"41" is displayed.
3. Press the <ENTER> key.
The A is stored.

[NOTE 1] Letters can be changed after setting.

Ex.

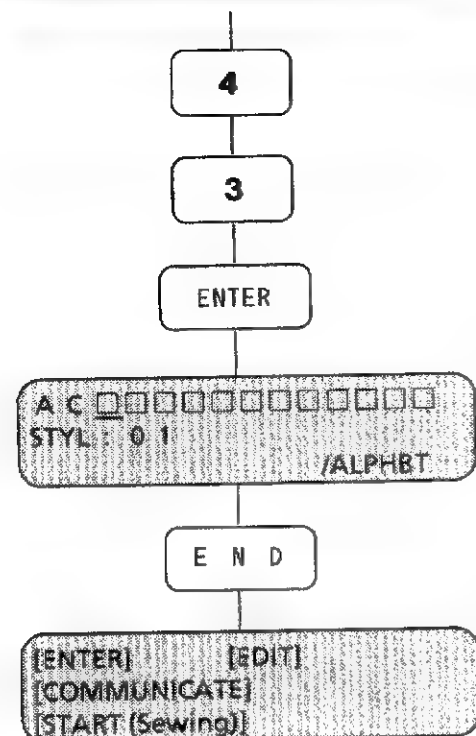
When correcting "AB" to "AC"



1. Move the cursor under the B using the <⏏> key (the jog key).
2. Press the <CLEAR> key.
The B on the cursor disappears.

[NOTE] Pressing the <AC> key will delete all the displayed characters.

5 Correcting a letter (2)



3. Press the character code C, 43.
"43" is displayed.
4. Press the <ENTER> key.
"43" is disappeared, and the display has been corrected to
"AC".
5. Press the <END> key.

The main menu will be displayed.

6 Setting letter spacing

Entering the arrows will shift the letters stored 1 mm each in the direction of the arrow.

Changing the enlargement and reduction ratio can also change the letter positions up to 9.9 mm per arrow. To shift the letters more than 9.9 mm, simply enter multiple arrows and change the ratio as required. For example, to shift the letters AB 15 mm apart, enter $A \leftarrow 1 \leftarrow 2$, and specify an enlargement of 7 times for arrow 1, 8 times for arrow 2. Since $7 + 8 = 15$, the letters will move 15 mm apart.

To shift the letters after entering, enter the following space code:

In moving the letters to the right, press 1E.

In moving the letters to the left, press 1F.

In moving the letters up, press 1C.

In moving the letters down, press 1D.

[NOTE] According to the arrangement, the direction will be changed.

According to the enlargement and reduction ratio, the volume of the movement will be changed.

When leaving a 1 mm space between A and B

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

ENTER

A □ □ □ □ □ □ □ □ □ □ □ □ □ □
STYL : 01 /ALPHBT

PATTERN

A → □ □ □ □ □ □ □ □ □ □ □ □ □ □
STYL : 01 /Code

ENTER

PATTERN

A → B □ □ □ □ □ □ □ □ □ □ □ □ □ □
STYL : 01 /ALPHBT

END

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

1. Press the <ENTER> key.
In case of entering capital letters, light the <SHIFT 1> key (upper) or(lower), or the <SHIFT 2> key.
2. Press the <A> key.
3. Press the <PATTERN> key to get into code entry mode.
4. Press the space code, 1E.
"1E" is displayed.
5. Press the <ENTER> key.
6. Get into the alphabet mode by pressing the <PATTERN> key twice.
7. Press the key.
8. Press the <END> key.

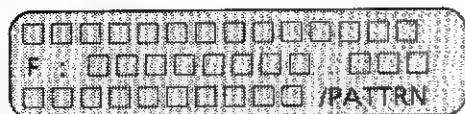
The main menu will be displayed.

* To use the <space> key one time is to leave space of 10 mm.

7 Entering patterns (1)

Pressing the <PATTERN> key in turn will alternate the modes : the alphanumeric mode, the code mode and the pattern mode.

Select the pattern mode by pressing the <PATTERN> key.



Only In this mode can the pattern data be entered from the floppy disk. A pattern is entered by a file name within eight letters.

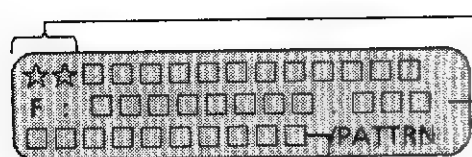
The available keys on this display are :

Available key	Function
Alphanumeric key	To enter file name (within eight letters) [NOTE 1]
← →	To move cursor from side to side
↑ ↓	To scroll file names
A C	To clear all data [NOTE 2]
C	To delete characters on the cursor (to clear entire file name when file name is displayed)
*	To confirm pattern name [NOTE 3] If data hasn't inputted, this key is used to switch to "data reading and sewing mode."
ENTER	To store file name (reading data)
PATTERN	To change entry modes (alphanumeric mode, code mode, pattern mode)
E N D	To end entry mode

[NOTE 1] In the pattern mode, the alphabetic letters will become all capital letters. Also, it is impossible to enter the European letters with the alphabet.

[NOTE 2] Note that all set values are cleared. (Refer to page 20.)

[NOTE 3] A file has a file name and a pattern name for each pattern data. Usually, only the file name is displayed. Pressing this key can confirm a pattern name prior to reading from the floppy disk.



When the data is a pattern, the mark "☆" is displayed for each pattern. (The pattern cannot be distinguished by "☆".)
 [NOTE]

When the pattern is in the floppy disk, pressing the <ENTER> key increases the number of "☆"s by one on the first row to show the pattern entry is completed.

The file name entered on the operation panel is displayed. (Within 8-digit-alphanumerics)

If "No File" appears, the floppy disk does not have the file whose name has been entered.
 If the file name has been mis-entered, re-enter the correct file name on the operation panel and press the <ENTER> key.
 When the file is in the other floppy disk, change the floppy disk and press the <ENTER> key.

[NOTE] The pattern name is displayed on the third row when moving the cursor under the mark "☆".

- * The pattern name is the name of pattern data and registered into the floppy disk with its pattern.

The pattern name and the file name are sometimes the same, but they are sometimes different.

7 Entering patterns (3)

Ex. When sewing the file name "SAKURA":

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

ENTER

STYL 01 /ALPHBT

PATTERN

F: /PATRN

S

A

K

U

R

A

F: SAKURA /PATRN

ENTER

☆ F: SAKURA /PATRN

END

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

1. Press the <ENTER> key.

2. The display will indicate the alphabet mode. Press the <PATTERN> key twice to get into the pattern mode.

3. Enter the file name "SAKURA".

4. The file name will be indicated in the second row of the display.

5. Press the <ENTER> key.

A "☆" will appear in the first row of the display. The file name in the second row will disappear.

To display the pattern name for the "☆" in the first row, move the cursor under the "☆". Then the pattern name will be displayed in the third row. [NOTE 1]

6. Press the <END> key.

7. The main menu will be displayed.

[NOTE 1] In this case, both the file name and the pattern name are the same. There are cases, however, when the two names are different.

[NOTE 2] When the <T> or <I> key is pressed, the file names in the floppy disk will appear in sequence in the second row of the display.
To display the pattern name corresponding to a given file name, press the <*> key. The pattern name or the file name will be displayed in the third row.

1. The pause setting between the patterns (letters)

- 1) If "No File" is displayed in the third row after entering the file name:
 - ① Press the <C> key to clear the "No File" display. Re-enter the file name.
 - ② Check the file names in the floppy disk by displaying them in sequence. Follow the procedure above ([NOTE 2]) to display the names.
- 2) To enter the color-change code:
 - ① Press the <*> key when in alphabet mode.
 - ② Press the <2>, <A>, <ENTER> keys when in code entry mode.

When entering the pattern and the color-change code at the same time, input the color-change code by either ① or ② above.

2. The pause setting within the pattern

When changing the color of a part of the pattern, automatic pause setting can be done. This should be done in the needle bar setting mode of the sewing mode.
Refer to the Needle bar setting [NOTE] in a chapter of Sewing (4).

[NOTE] When entering patterns from TFD floppy disk:
The multi-volume patterns or files will not be read into the machine.
This machine cannot manage multi-volume file (one pattern's data that separates into more than one volume).

When embroidering a pattern of a large number of stitches, the memory capacity inside the BAS-411 may not be large enough. If that is the case, do the following to embroider.

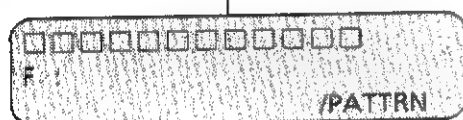
[NOTE 1] This method is valid only with the TFDs (Tajima floppy disks).

[NOTE 2] There are some other restrictions on data types and items in the editing mode. Please check beforehand.



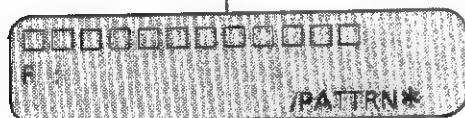
1. Enter the pattern entry mode.

AC



2. If data is inputted, clear all data by pressing either the <AC> or <C> key.

*



3. Press the <*> key to enter the data reading & sewing mode.

A~Z, ↑, ↓



4. Using the alphanumeric keys, <↑> and <↓> keys, input or select the file name.

ENTER



5. Press the <ENTER> key. Data reading will start.

E N D

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

6. Press the <END> key.

7. The main menu will be displayed.

[NOTE 1] Only one pattern's data can be entered at a time.

[NOTE 2] The data type should be the Tajima, or Barudan or Zangs data registered on a Tajima-format floppy disk (Hereafter TFD.). The Brother-format letter and design floppy disks cannot be used. A pattern in the multi-volume file (one pattern's data that separates into more than one volume) cannot be read.

[NOTE 3] Be sure to leave the floppy disk in the disk unit of BAS-411 during sewing. If the disk is taken out, BAS-411 cannot continue sewing.

[NOTE 4] When this function is used, there will be restrictions on editing mode and some other functions.

Editing	Restriction
ENLRG (Enlargement and reduction)	Not possible
DNS (sewing density and letter thickness)	Not possible
ARRAN (alignment)	Not possible
ROTAT (Rotation)	Possible in 0, 90, 180, and 270 degrees Select using the <→><↓><↑><←> keys then set using the <ENTER> key
CENT (Centering)	Not possible The first stitch point will always be the starting point.
RePT (Repeat)	Not possible
JMP (Jump)	Not possible
Stitch (Stitch)	Not possible

IV EDITING

Editing function outline (1)

<Editing items>

1. Enlargement/Reduction mode
2. Monogram area setting mode
3. Sewing density/letter thickness setting mode
4. Arrangement mode
5. Mirror image setting mode
6. Hoop feed setting mode
7. Rotation mode
8. Centering mode
9. Repeat sewing setting mode
10. Automatic jump setting mode
11. Material thickness indication mode
12. Automatic thread trimmer setting mode
13. Needle return setting mode (at the sewing end)
14. Boring mode
15. Stitch type selection mode

<How to select each mode>



When you want to select a mode from the editing menu, press the following keys.

The first screen

- <1> to select the "Enlargement/Reduction mode"
- <2> to select the "Monogram area setting mode"
- <3> to select the "Sewing density/letter thickness setting mode"
- <4> to select the "Arrangement mode"
- <5> to select the "Mirror image setting mode"
- <6> to select the "Hoop feed setting mode"
- <7> to select the "Rotation mode"
- <8> to select the "Centering mode"

The second screen

- <1> to select the "Repeat sewing setting mode"
- <2> to select the "Automatic jump setting mode"
- <3> to select the "Material thickness indication mode"
- <4> to select the "Automatic thread trimmer setting mode"
- <5> to select the "Needle return setting mode (at the sewing end)"
- <6> to select the "Boring mode"
- <7> to select the "Stitch type selection mode"
- <↑><↓> to switch over the first and the second screen
- <*> to check the settings in the editing menu
- <NEEDLE SET> to select the "Needle bar setting mode"
- <NEEDLE SELECT> to select the needle bar manually
- <THREAD SENSOR> to switch ON/OFF of the detector and to set the bobbin thread counter
- <END> to return to the main menu

Editing function outline (2)

1. Enlargement/Reduction mode

① Ratio ② Length
③ Auto

- (1) Function:
Setting the embroidery size by enlarging and reducing
- (2) Available keys:
- <1> to select "Ratio"
 - <2> to select "Length"
 - <3> to select "Auto"
 - <END> to return to the editing menu

1-1. Ratio

All W H

Each W H

- (1) Function:
Setting the size ratio
- (2) Available keys:
- <Numeric keys> to input ratio
 - <←>, <→> to select the character (pattern) to be enlarged/reduced. [Each]
 - <EDIT> to switch over [All] and [Each].
 - <ENTER> to confirm the inputted value and to switch width (W) and height (H).
 - <CLEAR> to set the default value
 - <END> to return to the editing menu

1-2. Length

LNG V mm H mm
ARA V mm H mm

- (1) Function:
Setting the total length
- (2) Available keys:
- <Numeric keys> to input the total length
 - <ENTER> to confirm the inputted value and to switch vertical (V) and horizontal (H)
 - <END> to return to the editing menu

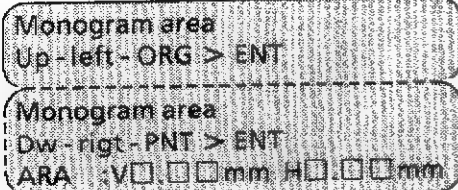
1-3. Auto

Calculat in ARA

- (1) Function:
Setting the automatic calculation in the area
- (2) Available key (used only when an error occurred):
- <END> to return to the editing menu

Editing function outline (3)

2. Monogram area setting mode



(1) Function:

Setting the monogram area using the jog keys

(2) Available keys:

- <←><→><↑><↓> to move the carriage
- <ENTER> to confirm the carriage location
- <END> to return to the editing menu

3. Sewing density and letter thickness setting mode



(1) Function:

Setting sewing density and letter thickness

(2) Available keys:

- < Numeric keys > to enter ratio
- <ENTER> to confirm the inputted value and to switch over sewing density and letter thickness
- <CLEAR> to set the default value
- <END> to return to the editing menu

4. Arrangement mode



(1) Function:

Arranging letters, symbols and patterns vertically or horizontally or on a curved line

5. Mirror image setting mode



(1) Function:

Setting the mirror image

(2) Available keys:

- <1> **J** to select the mirror image
- <2> **L** to select the mirror image
- <3> **f** to select the mirror image
- <4> **1** to select the mirror image
- <END> to return to the editing menu

Setting function outline (4)

6. Hoop feed setting mode

Move to HOP > ENT
HOP: X mm Y mm
SewEND Hoop: Manu

(1) Function:

Setting the hoop feed point

(2) Available keys:

- <←><→><↑><↓> to move the carriage
- <ENTER> to confirm the carriage location
- <CLEAR> to set the default value (Center of the area: X = 225 mm, Y = 142 mm)
- <*> to select "Manual" or "Auto"
- <END> to return to the editing menu

7. Rotation mode

Rotation angle
ROT = °

(1) Function:

Setting the rotation angle

(2) Available keys:

- <Numeric keys> to input the rotation angle
- <CLEAR> to set the default value
- <END> to return to the editing menu

8. Centering mode

Centering
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿

(1) Function:

Setting the centering

(2) Available keys:

- <Numeric keys> to select the type of centering
- <END> to return to the editing menu

9. Repeat sewing setting mode

RePT: direc Time
SPC: mm
LG: V mm H mm

(1) Function:

Setting the repeat sewing

(2) Available keys:

- <Numeric keys> to input the number of times and space
- <ENTER> to confirm the inputted value and to switch over "Time" and "SPC"
- <↑><↓> to select the direction (H or V)
- <CLEAR> to set the default value
- <END> to return to the editing menu

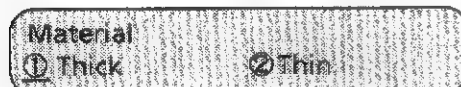
Editing function outline (5)

10. Automatic jump setting mode



- (1) Function:
Setting the automatic jump
- (2) Available keys:
- <1> to select "12.7 mm"
 - <2> to select "4.8 mm"
 - <END> to return to the editing menu

11. Material thickness indication mode



- (1) Function:
Indicating the material thickness
- (2) Available keys:
- <1> to select "Thick"
 - <2> to select "Thin"
 - <END> to return to the editing menu

12. Automatic thread trimming mode



- (1) Function:
Setting the number of stitches for automatic thread trimming
- (2) Available keys:
- <1> to select "8 st" (8 stitches)
 - <2> to select "5 st" (5 stitches)
 - <3> to select "3 st" (3 stitches)
 - <4> to select "NT" (No automatic thread trimming)
 - <END> to return to the editing menu

13. Needle return mode



- (1) Function:
Setting the needle return to the first stitch point after sewing is complete.
- (2) Available keys:
- <1> to select "On"
 - <2> to select "Off"
 - <END> to return to the editing menu

14. Boring mode

BORING : NO
SHIFT : NO

(1) Function:

Setting the boring sewing

(2) Available keys:

- <↑> to select "YES"
- <↓> to select "NO"
- <ENTER> to confirm the inputted value and to switch over "Boring" and "SHIFT"
- <CLEAR> to set the default value
- <END> to return to the editing menu

15. Stitch type selection mode

Stitch select
① Satin ② Tatami

Stitch select
Tatami PCH = mm

(When Tatami was selected)

(1) Function:

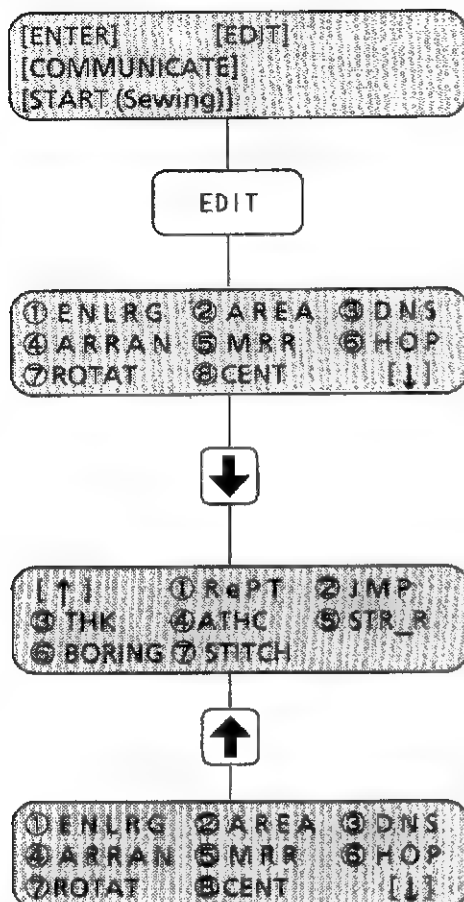
Selecting the stitch type

(2) Available keys:

- <1> to select "Satin"
- <2> to select "Tatami"
- <ENTER> to confirm the selection (in this example, Tatami stitch)
- <Numeric keys> to set the sewing pitch (in this example, Tatami pitch)
- <CLEAR> to set the default value (in this example, default for Tatami)
- <END> to return to the editing menu

Editing method

Select [EDIT] in the main menu.



Press the <EDIT> key. The machine will enter the editing mode.

The 8 items of the editing menu are displayed on the first screen.

Pressing the < [↓] > key displays the rest of the menu on the second screen.

To return to the first screen, press the < [↑] > key.

[NOTE] When the editing menu is displayed, pressing the <AC> key sets the values such as the ratio of the items below to the default. Then, pressing the <*> key displays the default value. (Refer to page 24.)

In the mark "□", the default value is not set. The previous value will remain.

1. Enlargement/reduction: altogether ratio setting width: 1.00 height: 1.00
2. Area: V: 285 mm H: 450 mm
3. Sewing density · letter thickness: sewing density: 1.0 letter thickness: 1.0
4. Arrangement: horizontal arrangement
5. Mirror image: "J" (non-reversed mirror image)
6. Hoop feed: center of the moving area of the X and Y carriages (coordinates: 225, 142)
7. Rotation: 000° (no rotation)
8. Centering: ☐
9. Repeat sewing: once, horizontally (non-repeat sewing)
10. Jump: 12.7 mm
11. Automatic thread trimmer: ☐ stitches
12. HOP/Manu
13. STR_R: OFF
14. Boring/Shift: OFF
15. Stitch: Satin

As shown below, three kinds of data are available but they differ with the processing during editing.

	(1) Block (condensed) format	(2) Normal format	(3) Data from editing system
Data	Alphabet and Kanji floppy disks supplied by Brother	TFD pattern floppy disk Brother design floppy disk Data in paper tape	Data sent by editing system
Data type	Block format of Brother patent	Stitch by stitch sewing as well as data in paper tape	Stitch by stitch sewing
Feature	Sewing density is adjustable. According to size enlargement or reduction, stitch number changes to keep sewing density. There are 5 stitches/mm when sewing density ratio is set to 1.0. Enlarging size increases stitch number. Reducing size decreases stitch number.	Sewing density is not adjustable. Stitch number is fixed and does not change. For example, when enlarging pattern 1.5 times, space between stitches increases and sewing density gets coarse because stitch number is fixed. When reducing pattern to $\frac{1}{2}$, otherwise, sewing density gets fine.	Sewing density adjustment, enlargement and reduction are not available. No editing.
Editing	Sewing density: available set value 0.1-2.0 Enlargement/reduction: available set values 0.10-9.99 [NOTE] Within 0.50-5.00 is enough to get fine embroidery.	Sewing density is not adjustable. Enlargement/reduction: available set values 0.10-9.99 [NOTE] Within 0.50-2.00 is enough to get fine embroidery. When reducing both height and width to $\frac{1}{2}$, its area is reduced to $\frac{1}{4}$ and sewing density increases 4 times because stitch number is fixed. In other words, sewing pitch decreases to $\frac{1}{2}$ and needle lowers on same point 2-4 times. This may cause loose threads or thread breakage.	

Editing function

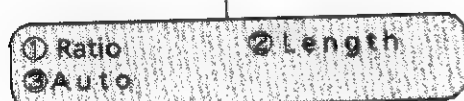
1 Enlarging and reducing (1)

The monogram can be enlarged or reduced within the set area.

Enlargement and reduction can be set in three ways: [Ratio], [Length] and [Auto].



1



Press the <1> key when the editing menu is displayed.

The setting items of enlargement and reduction are displayed.

Available key	Function
1	To select [Ratio] (setting size ratio)
2	To select [Length] (setting total length)
3	To select [Auto] (automatic calculation)
E N D	To return to editing menu

A. Setting size ratio

Ratio can be set either by [ALL] or [EACH]. By pressing the <EDIT> key, [ALL] and [EACH] are selected alternately.

A-1 Setting size ratio altogether

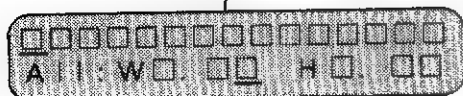
The enlargement and reduction ratio can be set in 0.01 increments within 0.10-9.99. Changing the ratio for one letter automatically changes the ratio for the other letters in the monogram.



1

1. Press the <1> key to select [Ratio].

If [EACH] is selected, press the <EDIT> key once to change it to [ALL].



The <EDIT> key switches over [ALL] and [EACH].

2. The cursor appears in the width ratio type area.

[NOTE] In default, the width "1.00" and the height "1.00" are displayed. When a different ratio has already been set, that ratio will be displayed.

Available key	Function
Alphanumeric key	To type ratio Ratio can be set in 0.01 increments within 0.10-9.99.
ENTER	To store typed ratio To switch type area (width \leftrightarrow height) Cursor moves to another type area.
C	To set ratio to default (1.00)
END	To return to editing menu

Ex

Change size ratio for AB altogether (width:1.50, height:1.10)

1

5

0

ENTER

1

1

0

ENTER

END

3. Press the <1>, <5> and <0> keys.
The width ratio "1.50" will be displayed.

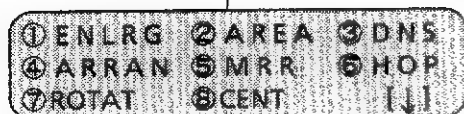
4. Press the <ENTER> key to store the width ratio.
The cursor will move to the height ratio type area.

5. Press the <1>, <1> and <0> keys.
The height ratio "1.10" will be displayed.

6. Press the <ENTER> key to store the height ratio.
The cursor will move to the width ratio type area.
Now the width ratio of 1.50 and height ratio of 1.10 are set.

[NOTE] When re-entering the ratio, press the <ENTER> key to move the cursor to the width or height you want, then enter the ratio.
Pressing the <CLEAR> key sets the ratio to default (width: 1.00, height: 1.00).

7. Press the <END> key.
The altogether ratio setting for the AB finishes.
The editing menu will be displayed again.






Height
1.10
times

A B

Width 1.50 times Width 1.50 times

The width and height can be changed to modify the shape of the letters in the monogram.

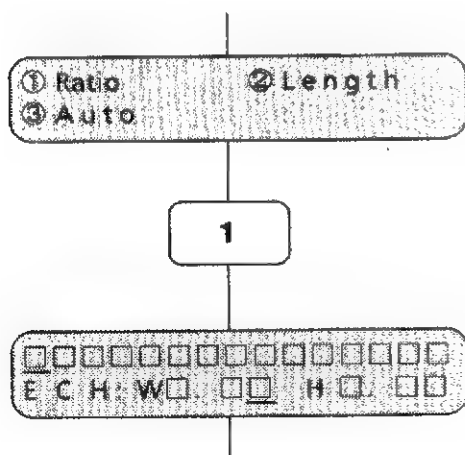
Ratio	Width < Height	Width = Height	Width > Height
Modified letter	 (Long narrow)	 (Standard)	 (Flat)

[NOTE1] Different letters have different sizes even if the same ratio is set.

[NOTE2] The machine does not sew the letters if the set ratio makes the letters larger than the set sewing area.

A-2 Setting size ratio individually (1)

The enlargement and reduction ratio can be set in 0.01 increments within 0.10-9.99, for each letter or pattern individually.



1. Press the <1> key to select [Ratio].

If [ALL] is selected, press the <EDIT> key to change it to [EACH].

[NOTE] In default, W "1.00" and H "1.00" are displayed. When a different ratio has already been set, that ratio will be displayed.

The <EDIT> key switches over [ALL] and [EACH].

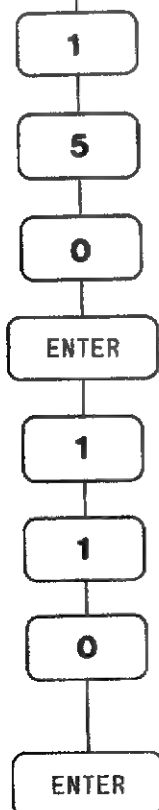
Available key	Function
Alphanumeric key	To type ratio Ratio can be set in 0.01 increments within 0.10-9.99.
← →	To move cursor
ENTER	To store typed ratio To switch type area (width↔height) Cursor moves to another type area.
C	To set default ratio (1.00)
END	To return to editing menu

Ex.

Change size ratio for AB individually

(The letters have already been stored.)

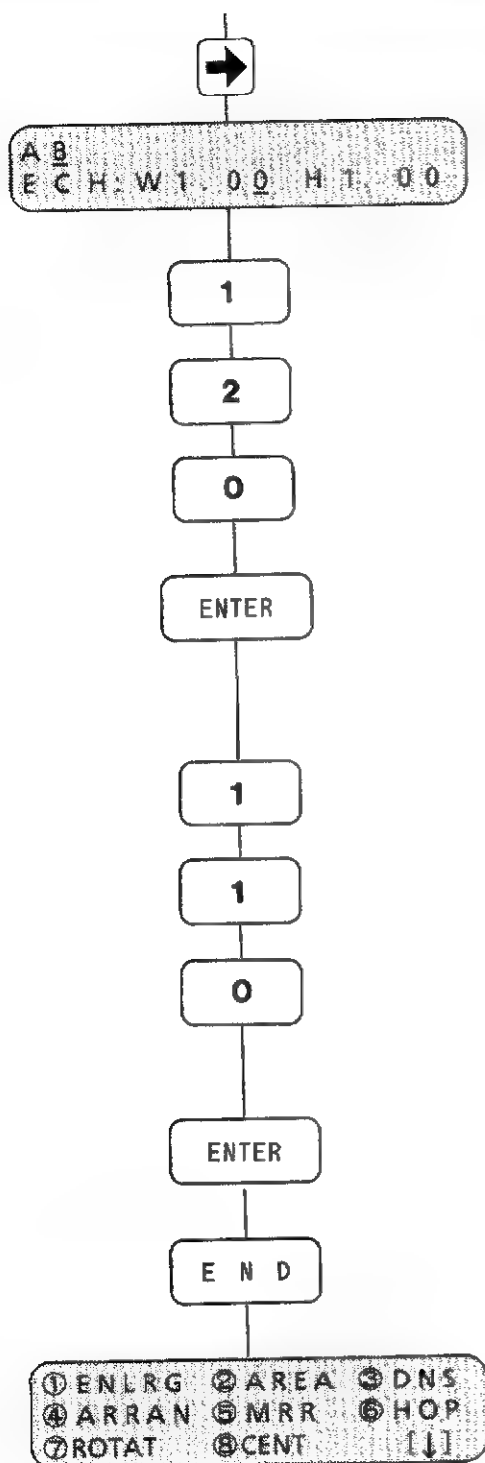
A (width:1.50, height: 1.10)
B (width:1.20, height: 1.10)



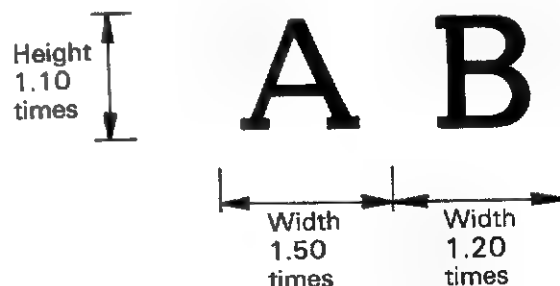
- Press the <1>, <5>, <0> keys.
The width ratio for the letter A "1.50" will be displayed.
- Press the <ENTER> key to store the width ratio.
The cursor will move to the height ratio type area.
- Press the <1>, <1> and <0> keys.
- Press the <ENTER> key to store the height ratio for the A.
Now the width ratio of 1.50 and height ratio of 1.10 of the letter A are set.

[NOTE] When not changing the displayed ratio, just press <ENTER> key.

1 Enlarging and reducing (5)



6. Press the <FORWARD> key (jog key).
The cursor will move to under the letter B. The width ratio and height ratio for the B will be displayed.
Another cursor appears in the width ratio type area.
7. Press the <1>, <2> and <0> keys.
8. Press the <ENTER> key to store the width ratio for the B.
9. The cursor moves to the height ratio type area.
10. Press the <1>, <1> and <0> keys.
11. Press the <ENTER> key to store the height ratio for the B.
Now the width ratio of 1.20 and height ratio of 1.10 of the letter B are set.
The individual ratio setting for the AB finishes.
12. Press the <END> key.
The editing menu will be displayed again.



- [NOTE1] After individual ratio setting is completed, to confirm the ratio for the letter where the cursor appears, press the <FORWARD> or <BACK> key.
- [NOTE2] To change the ratio for the letter where the cursor appears, press the <CLEAR> key to display "1.00", then re-enter the ratio.
- [NOTE3] The machine does not sew the letters if the set ratio makes the letters larger than the set sewing area.

A-3 Setting size ratio individually (2)

Inserting and deleting letter data

Size ratio is not applied to a letter itself, but to ■ position in the display.

Because of this, changing the size ratio, sewing and then adding or deleting letters causes letter sizes to change as shown below.

Ex. 1

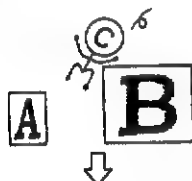


[1st letter]

[2nd letter]

A

B



Letter width	Letter height
0.60	1.00

Letter width	Letter height
2.00	1.50

[Ratio for 1st letter]

[Ratio for 2nd letter]

When the letter C is inserted between A and B, the size ratios change as follows.



[1st letter]

[2nd letter]

[3rd letter]

A

C

B



Letter width	Letter height
0.60	1.00

Letter width	Letter height
2.00	1.50

Letter width	Letter height
1.00	1.00

[Ratio for 1st letter]

[Ratio for 2nd letter]

[Ratio for 3rd letter]

In short, when a letter is moved, the size is determined by the ratio assigned to the position in the display.

Ex. 2



[1st letter]

[2nd letter]

[3rd letter]

A

C

B

A

C

B

Letter width	Letter height
0.60	1.00

Letter width	Letter height
2.00	1.50

Letter width	Letter height
1.00	1.00

[Ratio for 1st letter]

[Ratio for 2nd letter]

[Ratio for 3rd letter]

When the letter A is deleted, the size ratios change as follows.



[1st letter]

[2nd letter]

C

B



B

Letter width	Letter height
0.60	1.00

Letter width	Letter height
2.00	1.50

[Ratio for 1st letter]

[Ratio for 2nd letter]

In short, when a letter is moved, the size is determined by the ratio assigned to the position in the display.

Ex. 3



[1st letter]

[2nd letter]

A

B

A

B

Letter width	Letter height
0.60	1.00

Letter width	Letter height
2.00	1.50

[Ratio for 1st letter]

[Ratio for 2nd letter]

When the left arrow (←) is inserted to get the space between the letters shorter, the ratios change as follows.



[1st letter]

[2nd letter]

[3rd letter]

A

←

B

A

←

B

Letter width	Letter height
0.60	1.00

Letter width	Letter height
2.00	---

Letter width	Letter height
1.00	1.00

[Ratio for 1st letter]

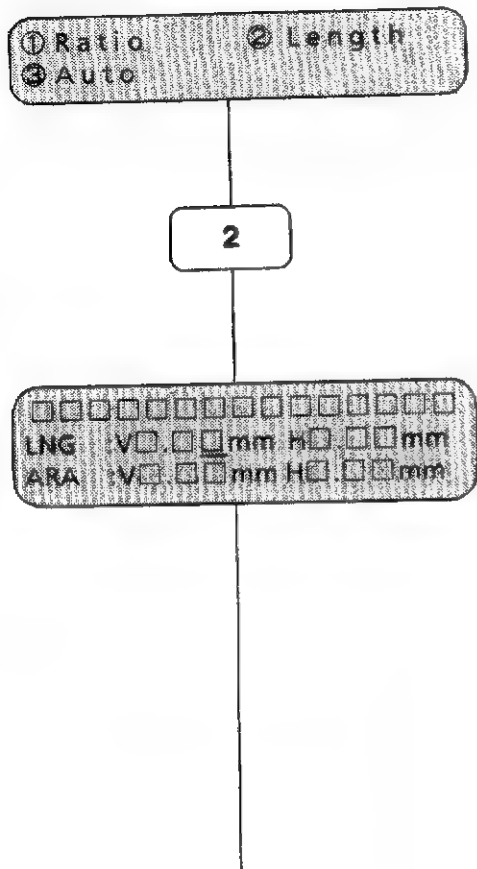
[Ratio for 2nd letter]

[Ratio for 3rd letter]

Note that the space provided by an arrow insertion is 1 mm only when the size ratio for the insertion position is the default ratio.
In example 3 above, the letter B will shift 2 mm to the left because the arrow is inserted at the position whose width ratio is 2.00, not default.

B. Setting total length

The total length (width and height) can be set in 1 mm increments for enlargement and reduction.



1. Press the <2> key to select [Length].

2. The cursor appears in the height type area.
Note that the current total length is displayed in three digits.

Available key	Function
Alphanumeric key	To type total length Total length can be set in 1 mm increments
ENTER	To store typed length To switch type area (height ↔ width) Cursor moves to another type area.
END	To return to editing menu

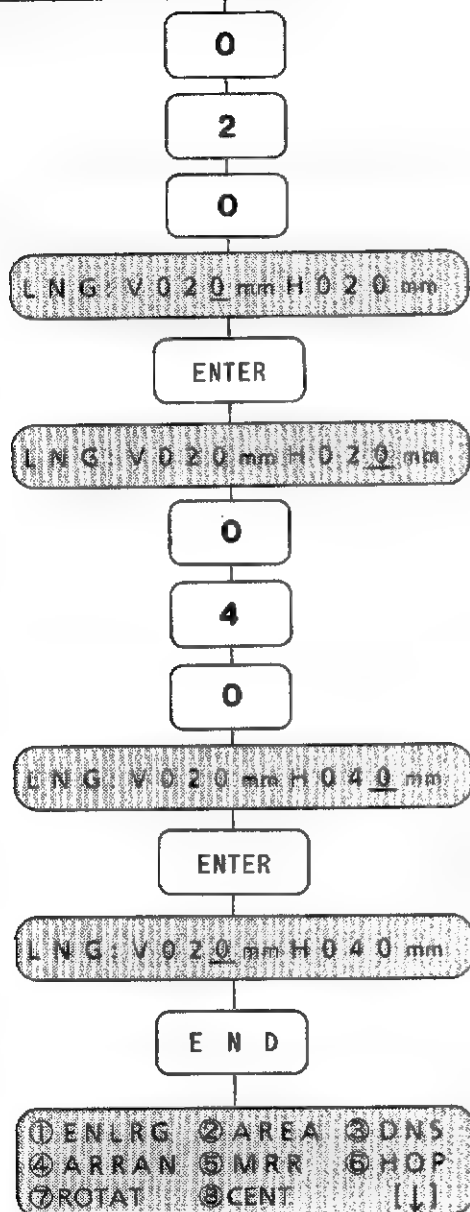
[NOTE] When confirming the total length after setting it:
With the editing menu displayed, pressing the <*> key displays the total length on the third row. At this time, the displayed number might be slightly smaller than the set total length.

Ex. Even if setting the total height to 200 mm and width to 300 mm, the displayed total length in confirmation might be
"LNG:V 199 mm H 299 mm".

1 Enlarging and reducing (9)

Ex.

Set the total height to 20 mm and width to 40 mm for the entered data AB
(area size: height 50 mm and width 50 mm)



4. Press the <0>, <2> and <0> keys.

Be sure to type in three digits.

[NOTE] The total dimensions of the monogram must be within the set area.

"V 020 mm" will be displayed.

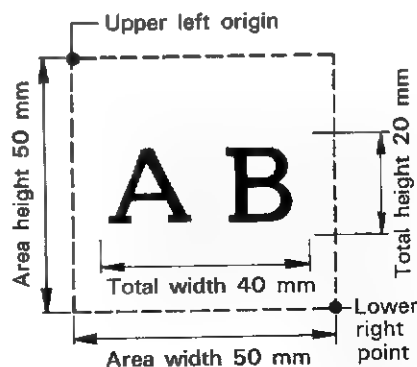
5. Press the <ENTER> key to store the height.
The cursor will move to the width type area.

6. Press the <0>, <4> and <0> keys.

"H 040 mm" will be displayed.

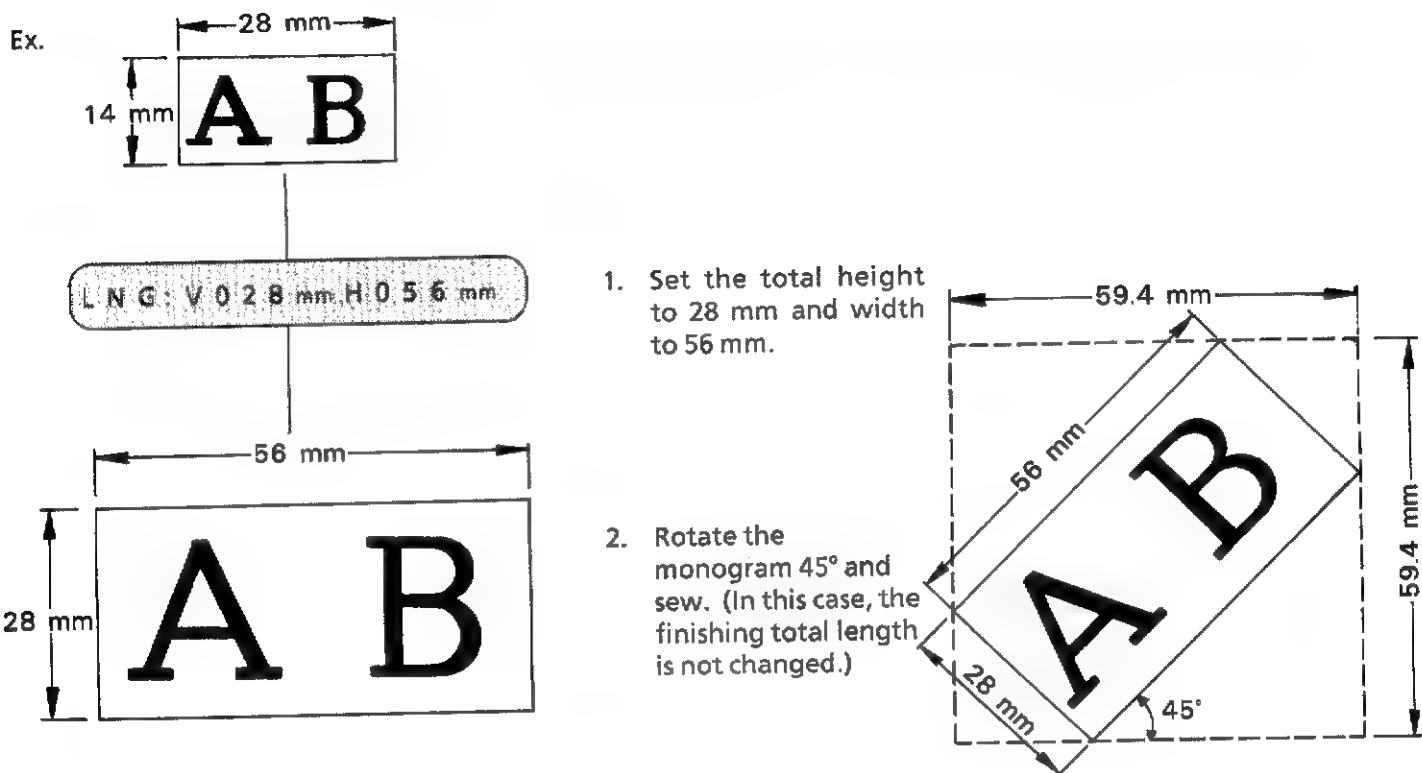
7. Press the <ENTER> key to store the width.
Again, the cursor will move to the height type area.

8. Press the <END> key.
The total length setting for the AB finishes.
The editing menu will be displayed again.



[NOTE1] The machine does not sew the letters if the set ratio makes the letters larger than the set sewing area.

[NOTE2] When setting the total length after rotating the monogram (except 0° , 90° , 180° , and 270°), the total length might not be calculated precisely, resulting in a pattern too large for the area. To set the total length of the finishing monogram, be sure to set the total length before rotation.

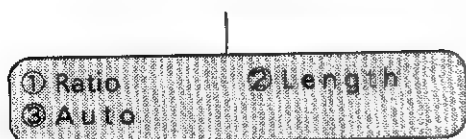


When confirming the total length using the $\langle * \rangle$ key after rotation, the displayed length is different from the set one as shown below:

"LNG: V 059 mm H 059 mm"

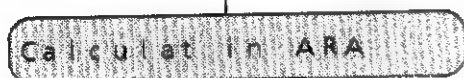
C. Automatic calculation

Letter size can be automatically calculated and sewn to fit the area size.



1. Press the <3> key to select [Auto].

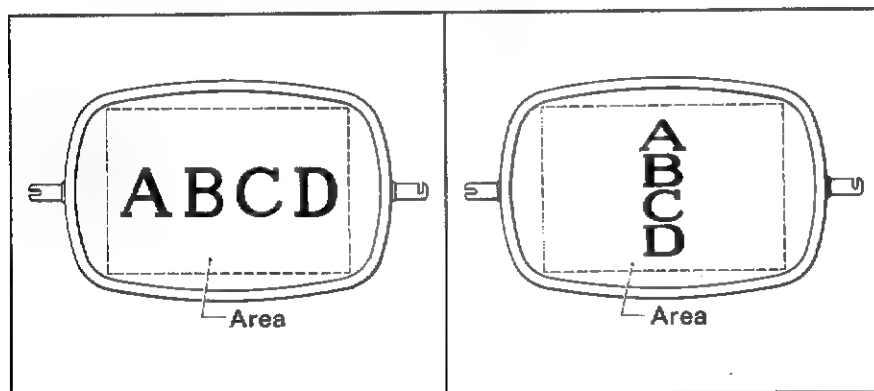
3



The ratios for the total width and height are set to the maximum so that both of them fit in the set area.



2. After the automatic calculation is completed, the editing menu is displayed.







[NOTE1] The monogram size is set to the largest ratio at which both the length and width can be sewn within the area.

[NOTE2] To confirm the automatically calculated size:
When the editing menu is displayed, press the <*> key. The automatically calculated size displayed on the second row is smaller than the area size on the first row, as shown below:



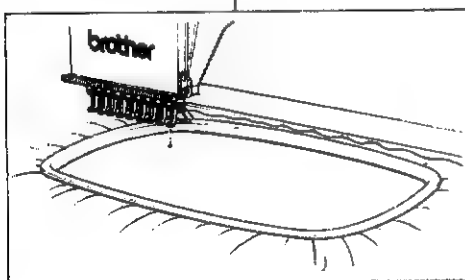
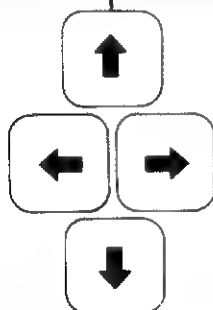
The monogram area can be set within an embroidery hoop.

The monogram area is set by determining the upper left origin and the lower right point to fit the shape of an embroidery hoop.

Available key	Function
   	To move carriage
ENTER	To store upper left origin and lower right point
END	To return to editing menu without changing value

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

Monogram area
Up-left-ORG>ENT



ENTER

Monogram area
Dw-right-PNT>ENT
ARA: V□□□mm H□□□mm

[NOTE1] Set the area within the attached embroidery hoop.

[NOTE2] The size and position of monogram letters depends on the area size.

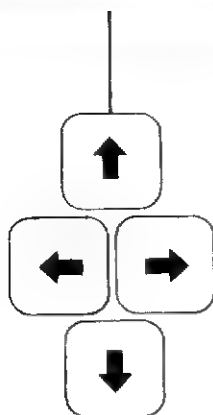
1. Press the <2> key to select [AREA].

2. By using the jog keys, move the needle position towards the upper left within the embroidery hoop to determine the upper left origin.

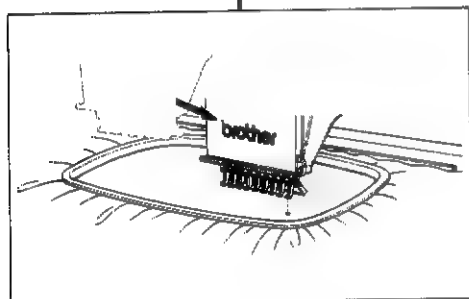
[NOTE] "Up-left-ORG>ENT" will be displayed until the <ENTER> key is pressed.

3. After determining the upper left origin, press the <ENTER> key to store the origin. Then, "Dw-right-ORG>ENT" will be displayed.

2 Setting monogram area (2)



[NOTE] The height and width of an area are displayed in three digits.



4. By using the jog keys, move the needle position towards the lower right within the embroidery hoop to determine the lower right point.

ENTER

While moving the needle position, the distance (height and width) of the current needle position from the upper left origin is displayed.

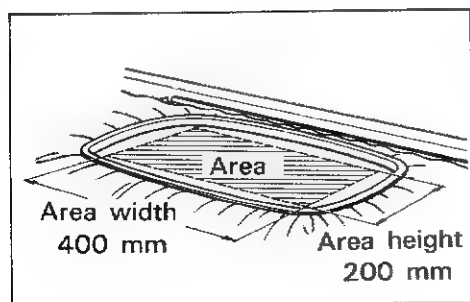
When stopping the needle position and pressing the <ENTER> key, that needle position is stored as the lower right point.

① ENL RG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

5. Press the <ENTER> key to store the lower right point. Now the area is set.

Then the editing menu is displayed.

[NOTE] To cancel area setting on the way, press the <END> key. The setting will return to the previous set value.



[NOTE1] The largest possible area is 285 mm in height and 450 mm in width.

[NOTE2] Setting the area larger than the embroidery hoop causes the needle to strike the hoop during sewing. Be sure to set the enlargement and reduction ratios, and set the sewing start point to keep the monogram within the hoop.

3

Setting sewing density and letter thickness (1)

The sewing density can be set in 0.1 increments within 0.1-2.0, and the letter thickness can be set within 0.6-2.0.



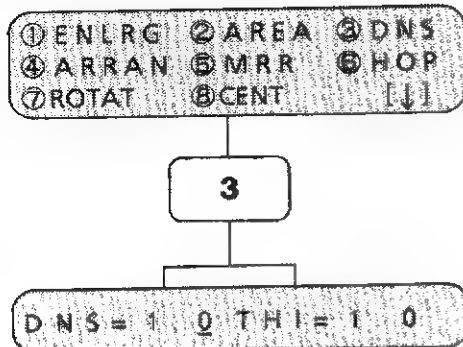
3



1. Press the <3> key to select [DNS].

Available key	Function
NUMERIC KEYS	To type sewing density and letter thickness ratios
ENTER	To store typed value To switch type area (density ↔ thickness) Cursor moves to another type area.
C	To set default value
END	To return to editing menu

A. Setting sewing density



The sewing density ratio can be set within 0.1-2.0.

1. Press the <3> key to select [DNS].

2. The current sewing density and letter thickness ratios are displayed.

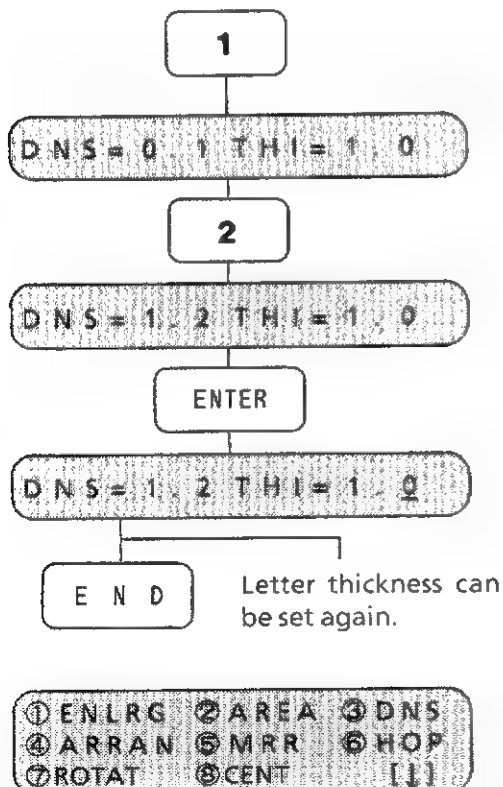
[NOTE1] In default, "1.0" appears.

[NOTE2] When the sewing density ratio has already been set, that ratio is displayed.

[Default]

Denser 2.0 ← 1.0 → 0.1 Coarser

Ex. Change sewing density ratio to 1.2



1. Press the <1> key.

A "0" will be carried and the "1" will appear in the first place.

2. Press the <2> key.

The "1" will be carried and the "2" will appear in the first place.

3. Press the <ENTER> key to store 1.2. The cursor will move to the letter thickness.

The cursor alternately moves to DNS and THI each time the <ENTER> key is pressed.

4. Press the <END> key to return to the editing menu.



2.0



Default (1.0)



0.5

B. Setting letter thickness

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

3

DNS = 1.0 THI = 1.0

ENTER

DNS = □ THI = □

The letter thickness ratio can be set within 0.6-2.0.

1. Press the <3> key to select [DNS].

2. Press the <ENTER> key to move the cursor to the letter thickness type area.

[NOTE1] In default, "1.0" appears.

[NOTE2] When the letter thickness ratio has already been set, that ratio is displayed.

Ex. Change letter thickness ratio to 1.5

1

DNS = 1.0 THI = 0.1

5

DNS = 1.0 THI = 1.5

ENTER

DNS = □ THI = 1.5

END

Sewing density can be set.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

[Default]

Bolder 2.0 ← 1.0 → 0.6 Thinner

3. Press the <1> key.

A "0" will be carried and the "1" will appear in the first place.

4. Press the <5> key.

The "1" will be carried and the "5" will appear in the first place.

5. Press the <ENTER> key to store "1.5." The cursor will move to the sewing density.

6. Press the <END> key to return to the editing menu.

A

2.0

A

Default (1.0)

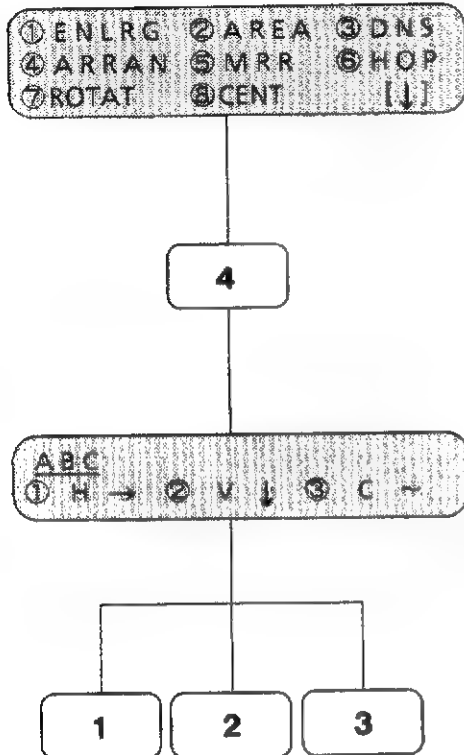
A

0.6

Letters, symbols and patterns can be arranged vertically or horizontally or on a curved line.

By inserting a return code between characters (patterns) in the entry mode, arrangement on the several lines (both vertical and horizontal) can be made.

Also, by inserting a return code between characters (patterns), they can be grouped, and then each group can be arranged on different lines.






1. Press the <4> key to select [ARRAN].

2. Select the number:

Pressing the <1> key sets the horizontal arrangement.

Pressing the <2> key sets the vertical arrangement.

Pressing the <3> key sets the arrangement on the curved line.

<p>1. Horizontal</p> 	<p>2. Vertical</p> 	<p>3. Curved line</p> 
--	--	---

[NOTE] Refer to page 93-101 "Base line registration" for making a curved line to arrange the letters and patterns along.

Ex.

When horizontal arrangement data includes return code:

A B C  ☆ ☆  E F G

Set value in the editing:

- 1) Centering 
- 2) Ratio is set by each character or pattern

 A B C  ☆ ☆  E F G
 ① H → ② V ↓ ③ C ~

1

1


E N D

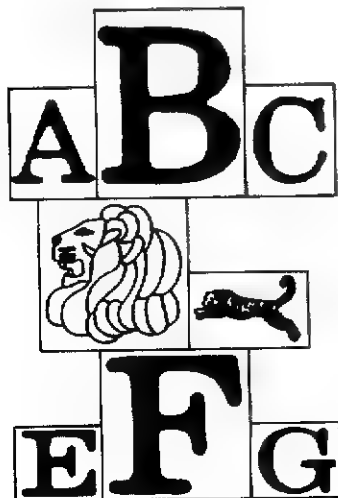
1. Press the <1> key to select "H→."

2. Using the <I> (alphabet) key, select the arrangement type.

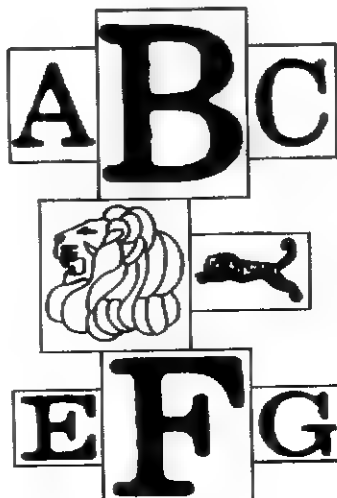
The symbols for each arrangement type ( ,  , and ) are selected cyclically by pressing the <I> key.

[NOTE] A return code cannot be inserted between the characters (patterns) on the same curved line. Refer to page 88 for arranging characters (patterns) on different lines..

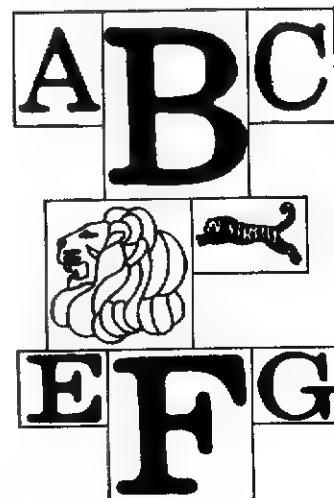
 = characters are arranged above base line



 = characters are arranged in the center of base line

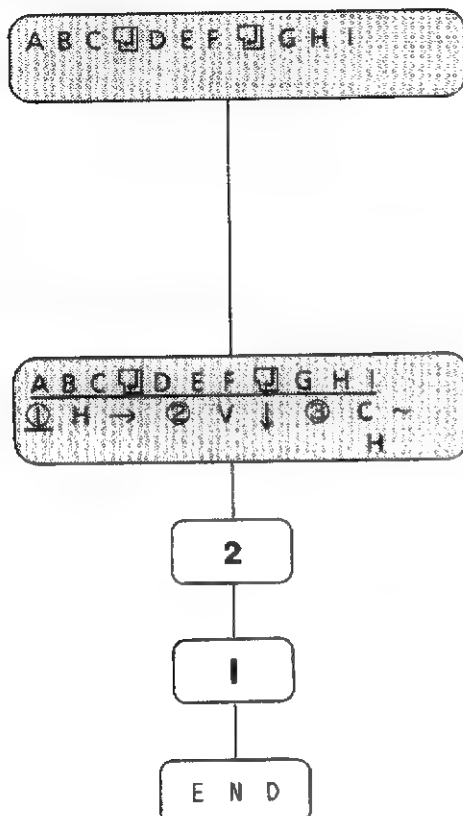


 = characters are arranged below base line



Ex.

When vertical arrangement data includes return code:



Set value in the editing:







- 1) Centering ☐
- 2) Ratio is set by each character or pattern

1. Press the <2> key to select "V↓."

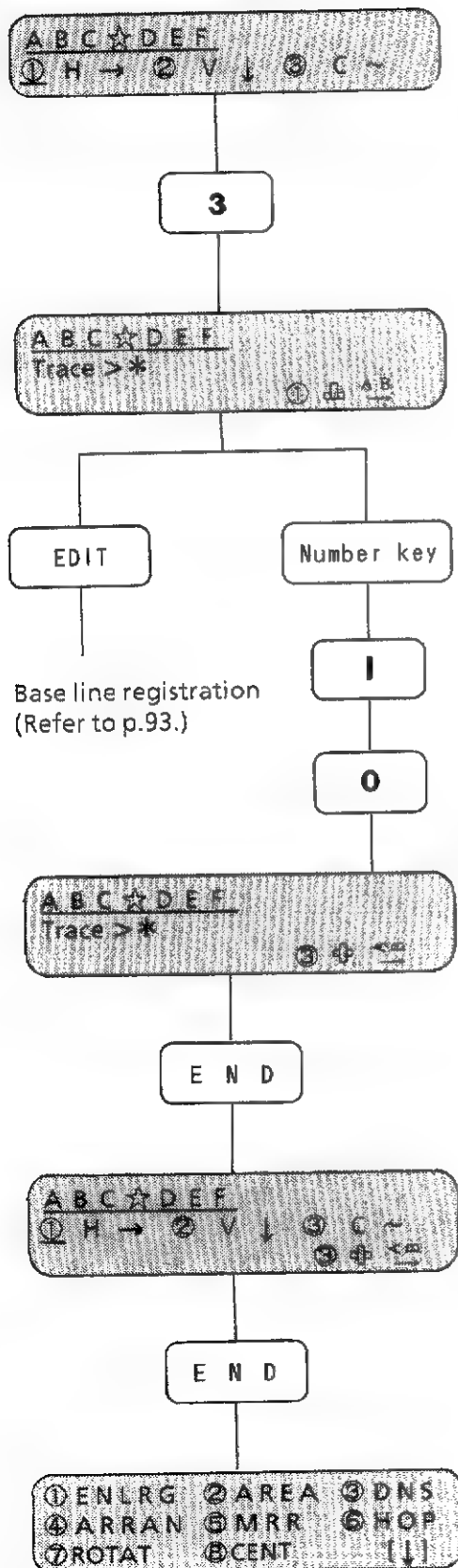
2. Using the <I> (alphabet) key, select the arrangement type.

The symbols for each arrangement type (, , and ) are selected cyclically by pressing the <I> key.

[NOTE] A return code cannot be inserted between the characters (patterns) on the same curved line. Refer to page 88 for arranging characters (patterns) on different lines.

 = left side margin	 = center line	 = right side margin
		

Ex. When arrangement data only includes characters (patterns) :



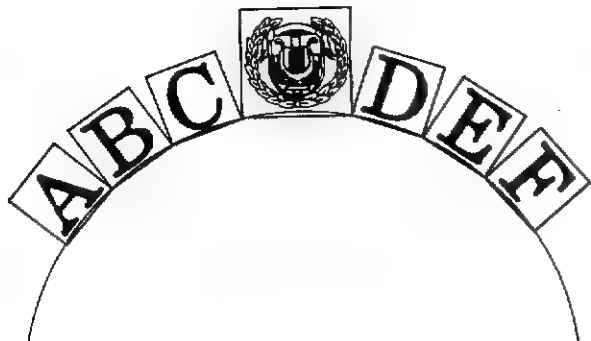
Set value in the editing:

- 1) Centering ☐
- 2) Ratio is set by each character or pattern

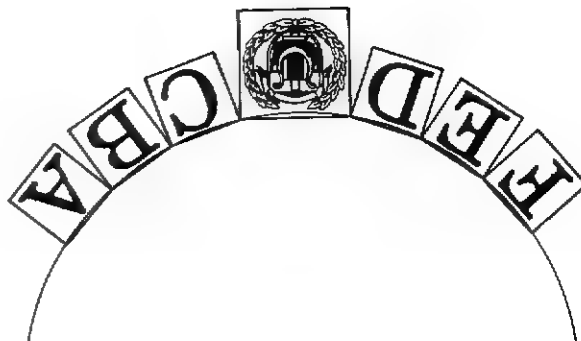
1. Press the <3> key to select "C ~."
2. Press one of the <1> to <9> keys to select base line.
In this example, <3> is selected.
3. Using the <I> (alphabet) key, select the arrangement type.
The symbols for each arrangement type (♂ , ♂ , and ♂) are selected cyclically by pressing the <I> key.
4. Press the <O> (alphabet) key to select character (pattern) orientation.
♂ , ♂ , ♂ and ♂ are selected cyclically by pressing the <O> key.

[NOTE] If any base line has not been registered, (indicated by highlighted letters), press the <EDIT> key to go into the line registration mode and register the desired line.

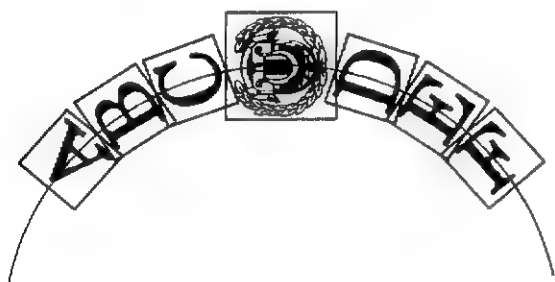
arrangement type = \mathbb{A}
 character (pattern) orientation = \overrightarrow{AB}



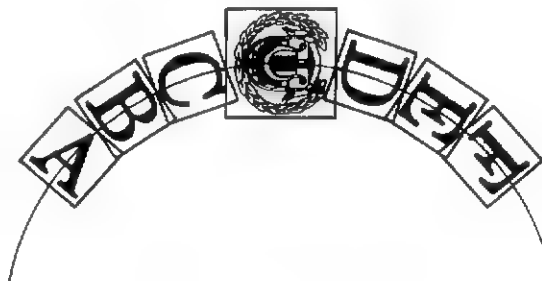
arrangement type = \mathbb{A}
 character (pattern) orientation = \overleftarrow{AB}



arrangement type = \mathbb{B}
 character (pattern) orientation = \overrightarrow{AB}



arrangement type = \mathbb{B}
 character (pattern) orientation = \overleftarrow{AB}



arrangement type = \mathbb{P}
 character (pattern) orientation = \overrightarrow{AB}



arrangement type = \mathbb{P}
 character (pattern) orientation = \overleftarrow{AB}



By deviding characters (patterns) into groups by inserting return codes, each group of characters (patterns) can be arranged on the different base lines.

Ex. 4 explains how to create an embroidery like the illustration below.



Ex. 4 When curved arrangement data includes return code:



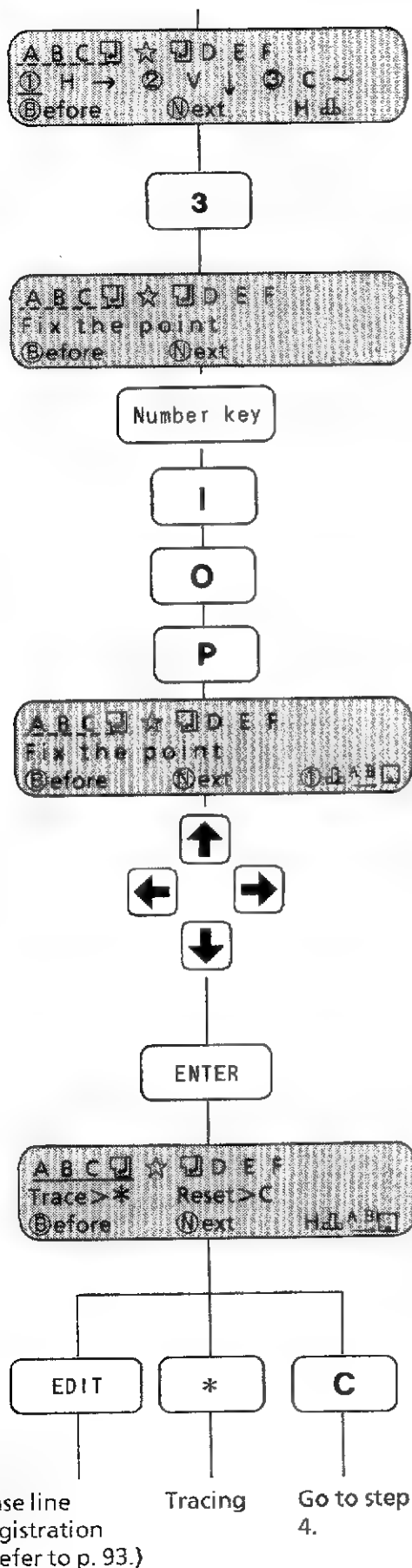
Set value in the editing:

- 1) Centering ☐
- 2) Ratio is set by each character (pattern)

EDIT

1. Press the <EDIT> key to arrange characters (patterns) by each group.





2. Press the <3> key to select "C~."

[Arranging the character group "A B C" along the curved line]

3. By pressing the or <N> of the alphabet keys, select "A B C."
The selected group of characters (patterns) will be underlined with a dotted line.

4. Press one of the <1> to <9> keys to select the base line.

5. Press the <I> (alphabet) key to select the arrangement type.
The symbols for each arrangement type (\square , \square , and \square) are selected cyclically by pressing the <I> key.

6. Press the <O> (alphabet) key to select the direction of the characters (patterns).
 \overrightarrow{AB} , \overleftarrow{AB} , \overline{AB} and \overline{AB} are selected cyclically by pressing the <O> key.

7. Press the <P> (alphabet) key to select the base point location.
The base point location symbols ($\square \rightarrow \square$, $\square \rightarrow \square$) are selected cyclically by pressing the <P> key.

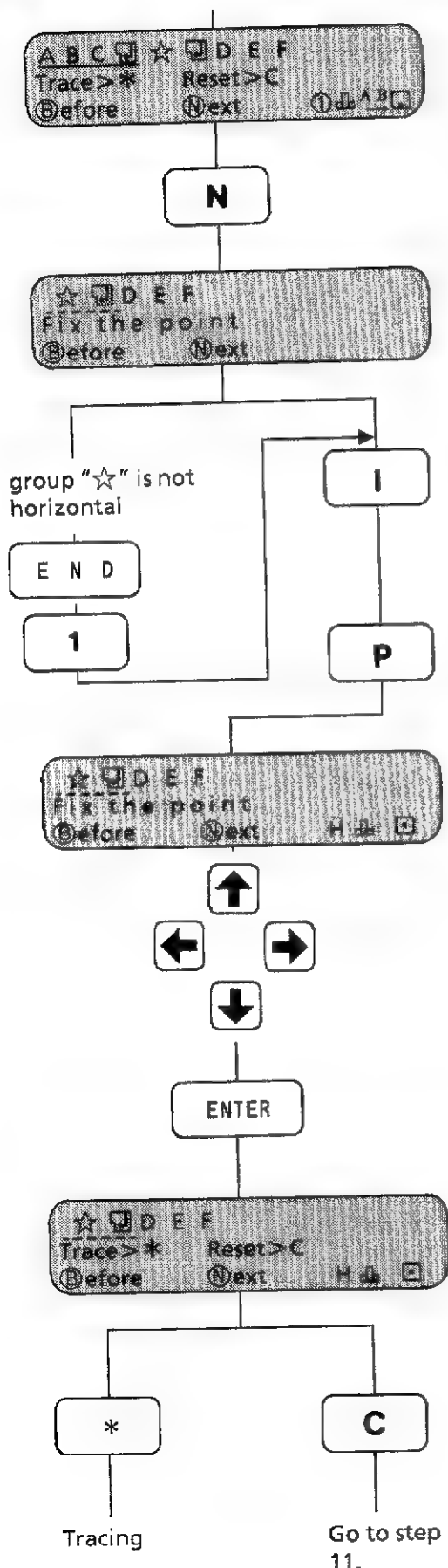
[NOTE] Steps 4, 5, 6 and 7 can be skipped if the set values are not to be changed.

8. Using the jog keys <→, <←, <↑, <↓, <→, move the hoop and the holder base to the desired position. Press the <ENTER> key to set the base point.

[NOTE 1] Do not forget to press the <ENTER> key after moving the hoop and the holder base. When the base point is set, the group of characters (patterns) will be underlined with a solid line.

[NOTE 2] If the <*> key is pressed here, the machine will trace the base line. At this time, the base point comes to the middle of the base line.
If any base line has not been registered, (indicated by a highlighted number), press the <EDIT> key and then register a base line.

[NOTE 3] If the <CLEAR> key is pressed here, the base point set at step 8 will be cancelled and the machine goes back to step 4.



[Arranging the pattern "☆"]

9. Press the <N> (alphabet) key to select the pattern "☆."
The selected group of characters (patterns) will be underlined with a dotted line.

10. Press the <I> (alphabet) key to select the arrangement type.
The symbols for each arrangement type (⌵ , ⌶ , and ⌷) are selected cyclically by pressing the <I> key.

11. Press the <P> (alphabet) key to select the base point location.
The base point location symbols ($\square \rightarrow \square \cdot \rightarrow \square$) are selected cyclically by pressing the <P> key.

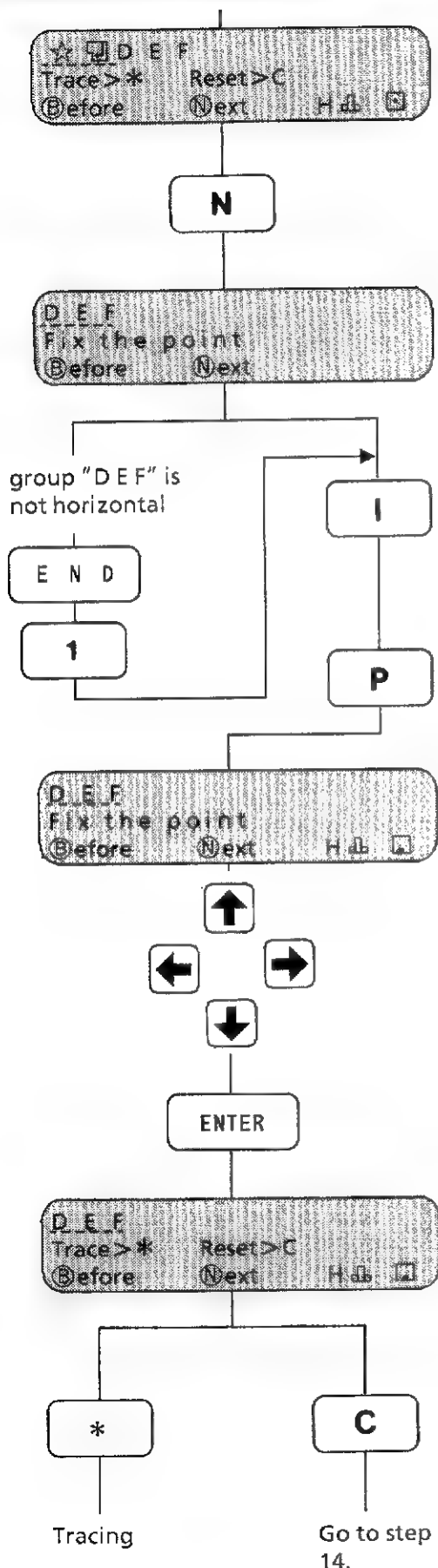
[NOTE] Steps 10 and 11 can be skipped if the set values are not to be changed.

12. Using the jog keys <→, <←, <↑, <↓>, move the hoop and the holder base to the desired position. Press the <ENTER> key to set the base point.

[NOTE 1] Do not forget to press the <ENTER> key after moving the hoop and the holder base. When the base point is set, the group of characters (patterns) will be underlined with a solid line.

[NOTE 2] If the <*> key is pressed here, the machine will trace the base line. If the hoop and the holder base were not moved at step 12, the machine will not trace the base line.

[NOTE 3] If the <CLEAR> key is pressed here, the base point set at step 12 will be cancelled and the machine goes back to step 10.



[Arranging the character group "DEF"]

13. Press the <N> (alphabet) key to select the character group "DEF."
The selected group of characters (patterns) will be underlined with a dotted line.

14. Press the <I> (alphabet) key to select the arrangement type.
The symbols for each arrangement type (H.L. , H.L. , and H.L.) are selected cyclically by pressing the <I> key.

15. Press the <P> (alphabet) key to select the base point location.
The base point location symbols ($\square \rightarrow \square \cdot \rightarrow \square$) are selected cyclically by pressing the <P> key.

[NOTE] Steps 14 and 15 can be skipped if the set values are not to be changed.

16. Using the jog keys <→, <←, <↑, <↓>, move the hoop and the holder base to the desired position. Press the <ENTER> key to set the base point.

[NOTE 1] Do not forget to press the <ENTER> key after moving the hoop and the holder base. When the base point is set, the group of characters (patterns) will be underlined with a solid line.

[NOTE 2] If the <*> key is pressed here, the machine will trace the base line. If the hoop and the holder base were not moved at step 16, the machine will not trace the base line.

[NOTE 3] If the <CLEAR> key is pressed here, the base point set at step 16 will be cancelled and the machine goes back to step 14.



17. Press the <END> key twice to exit from the current mode.

END



END



- [NOTE 1] If there is character (pattern) data on the curved line (see ex.4 on page 88), rotation angle can be changed only by 90 degrees increment.
- [NOTE 2] If there is character (pattern) data on the curved line (see ex.4 on page 88), mirror image cannot be set. Also, space cannot be entered by the ASCII code and arrows indicating spaces cannot be displayed.
If you wish to enter a space between characters (patterns), use the <SPACE> key on the operation panel.



(correct)



(incorrect)



4 Arranging (1) <Base line registration>

A curved line can be made by the operator so that the characters (patterns) can be sewn along the desired base line.
Up to 9 lines can be registered. Lines that can be registered are straight lines (including slanted lines), arcs and splines.

A B C

1. After inputting character (pattern) data in the character (pattern) entry mode, go into the editing mode.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

2. Press the <4> key to select "ARRAN."

4

A B C
① H → ② V ↓ ③ C ~

3. Press the <3> key to select "C ~."

3

A B C
Trace>*

4. Press the <EDIT> key to go into the line registration mode.

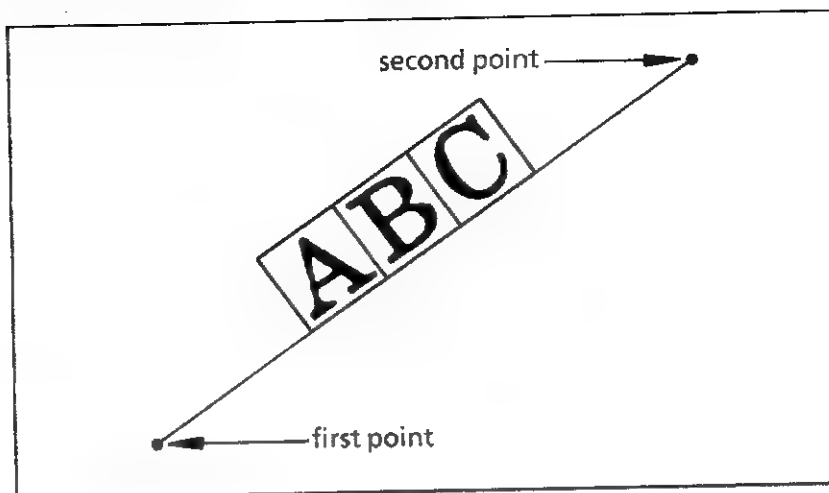
EDIT

Now the registration of lines is possible.

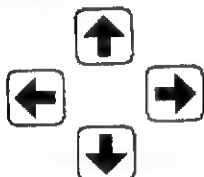
Curve No. 1 2 3 4 5 6 7 8 9
Fix the C _ point

[NOTE] Line registration numbers are from ① to ⑨.
Highlighted numbers indicate that lines are not registered under these numbers.

Ex. To arrange the characters (patterns) on the straight line (2 points entered):

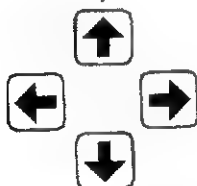


Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point



Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point
01 Point [EDIT]

ENTER



Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point
02 Point [EDIT]

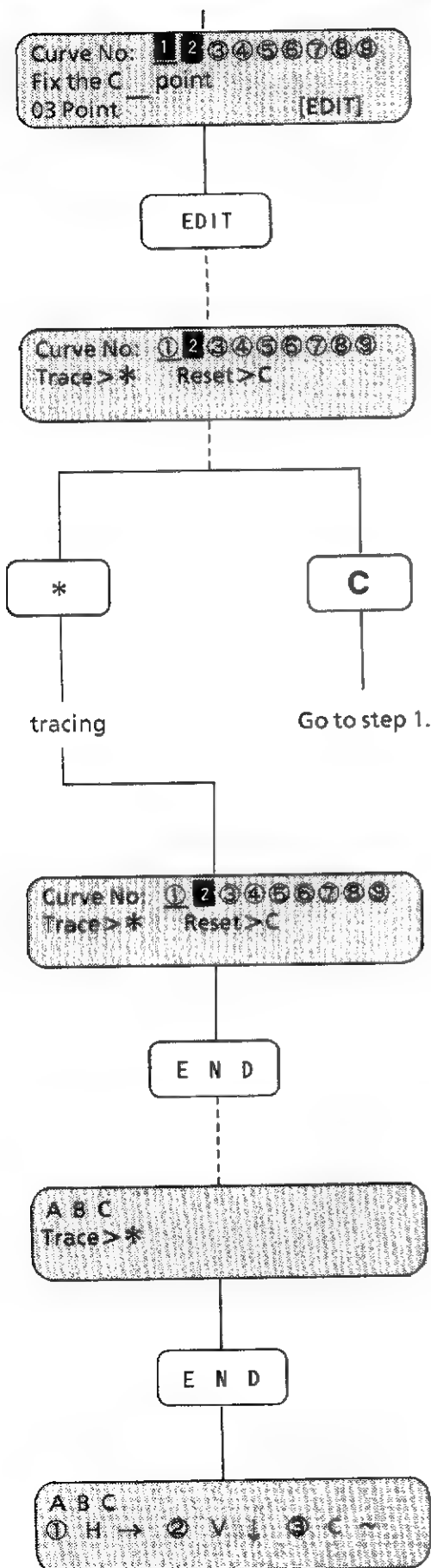
ENTER

1. To register a line in the underlined number, press the numeric key of that number. In this example, the number "1" is underlined, so press the <1> key.

2. Using the jog keys <→, <←, ↑, ↓>, move the hoop and the holder base to the desired position. Press the <ENTER> key to enter the first point.

[NOTE] Do not forget to press the <ENTER> key after moving the hoop.

3. Using the jog keys <→, <←, ↑, ↓>, move the hoop and the holder base to the desired position. Press the <ENTER> key to enter the second point.



3. After entering the first and the second points, press the <EDIT> key. The hoop and the holder base move to the first point and stops there. The Curve No. "1" will be indicated with a positive number, indicating that the registration is complete.

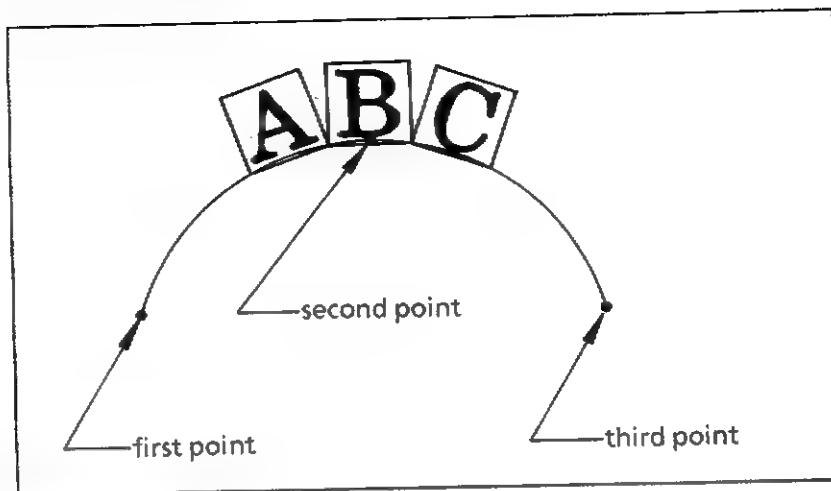
[NOTE 1] If the <*> key is pressed here, the machine will trace the line between the two points.

[NOTE 2] If the <CLEAR> key is pressed here, the previously entered two points will be cancelled and the machine goes back to step 1. (Press this key when you want to re-enter the line.)

4. Press the <END> key twice to escape from the current mode.

This is the end of the line registration procedure.

Ex. To arrange the characters (patterns) on the arc (3 points entered):



Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point

2

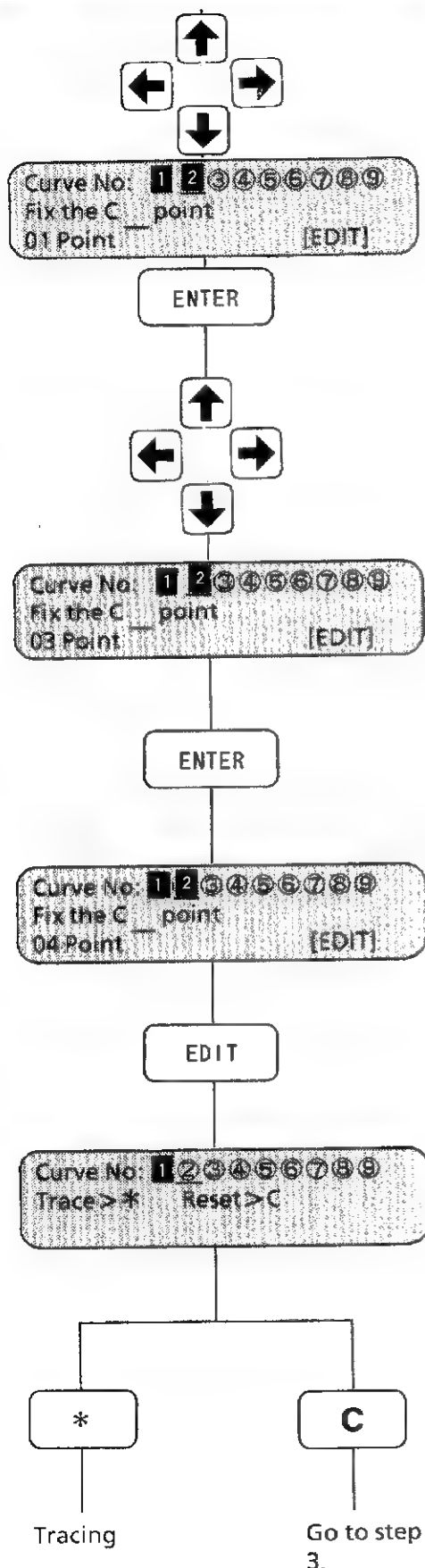
Curve No: 1 2 3 4 5 6 7 8 9
Trace > * Reset > C

C

Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point

1. To register a line under the desired number, press the numeric key of that number.
For example, if you wish to register under the number "2", press the <2> key.

2. At this point, another line has already been registered under the number "2."
Press the <CLEAR> key to cancel the previous registration.



3. Using the jog keys <→, <←, ↑, ↓>, move the hoop and the holder base to the desired position. Press the <ENTER> key to enter the first point.

[NOTE] Do not forget to press the <ENTER> key after moving the hoop.

4. Using the jog keys <→, <←, ↑, ↓>, move the hoop and the holder base to the desired position. Press the <ENTER> key to enter the second point. Enter the third point in the same way.

[NOTE] Be sure to enter only three points. If four or more points are entered, the line will not be an arc.

5. After entering all the points, press the <EDIT> key. The hoop and the holder base move to the first point and stops there.
The Curve No. "2" will be indicated with a positive number, indicating that the registration is complete.

[NOTE 1] If the <*> key is pressed here, the machine will trace the arc connecting the three points.

[NOTE 2] If the <CLEAR> key is pressed here, the previously entered three points will be cancelled and the machine goes back to step 3.
(Press this key when you want to re-enter the line.)

Curve No: 1 2 3 4 5 6 7 8 9
Trace>* Reset>C

E N D

A B C
Trace>*

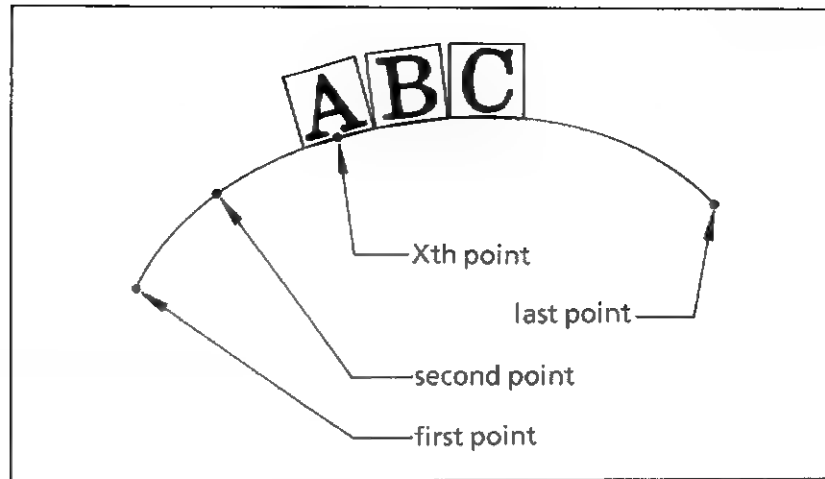
E N D

A B C
① H → ② V ↓ ③ C ~

6. Press the <END> key twice to exit from the current mode.

This is the end of the line registration procedure.

Ex. To arrange the characters (patterns) on the spline:



Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point

2

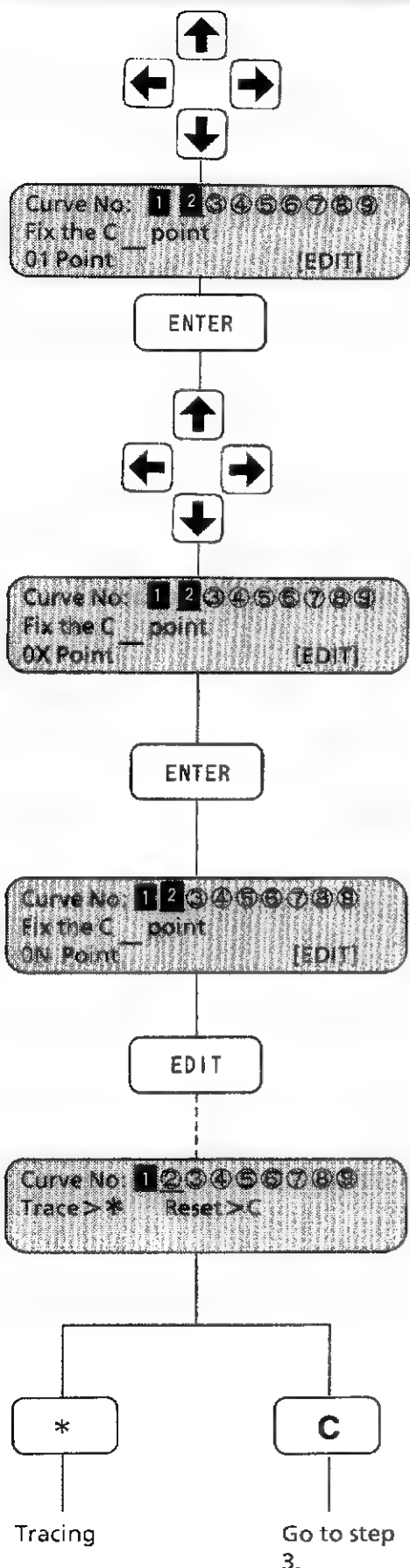
Curve No: 1 2 3 4 5 6 7 8 9
Trace > * Reset > C

C

Curve No: 1 2 3 4 5 6 7 8 9
Fix the C _ point

1. To register a line under the desired number, press the numeric key of that number.
For example, if you wish to register under the number "2", press the <2> key.

2. At this point, another line has already been registered under the number "2."
Press the <CLEAR> key to cancel the previous registration.



3. Using the jog keys \leftrightarrow , \leftarrow , \uparrow , \downarrow , move the hoop and the holder base to the desired position. Press the <ENTER> key to enter the first point.

[NOTE] Do not forget to press the <ENTER> key after moving the hoop.

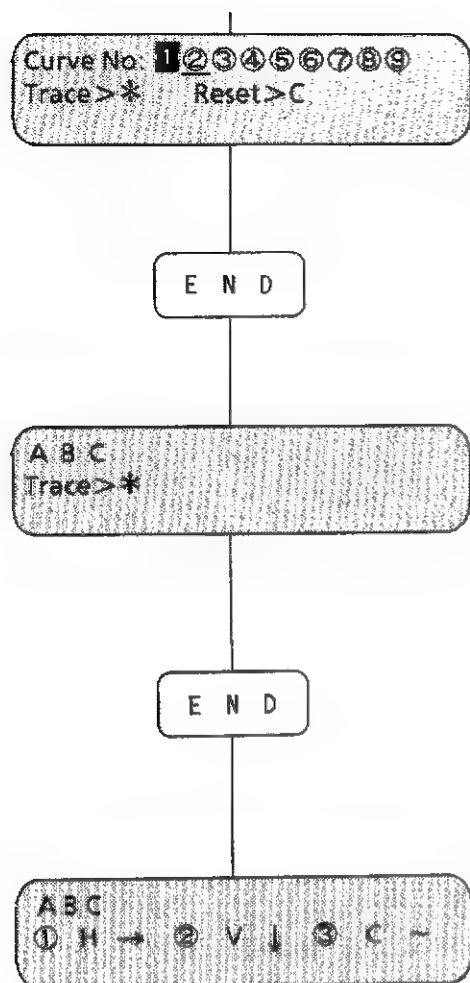
4. Using the jog keys \leftrightarrow , \leftarrow , \uparrow , \downarrow , move the hoop and the holder base to the desired position. Press the <ENTER> key to enter the second point. Enter the third point to the last point (in this example, the last point is indicated as N) in the same way.

[NOTE] Up to 10 points can be entered. To make the spline, at least 4 points should be entered.

5. After entering all the points, press the <EDIT> key. The hoop and the holder base move to the first point and stops there. The Curve No. "2" will be indicated with a positive number, indicating that the registration is complete.

[NOTE 1] If the <*> key is pressed here, the machine will trace the spline connecting entered points.

[NOTE 2] If the <CLEAR> key is pressed here, the previously entered points will be cancelled and the machine goes back to step 3. (Press this key when you want to re-enter the line.)



6. Press the <END> key twice to exit from the current mode.

This is the end of the lineregistration procedure.

5 Setting mirror image

Three kinds of mirror image processes--of X axis symmetry, Y axis symmetry and origin symmetry--can be set.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

5

mirror image
① J ② L ③ f ④ 1

Number key

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

1. Press the <5> key to select [MRR].



2. Press one of the <1>, <2>, <3> and <4> keys to select the number.

3. After the number is selected, the editing menu appears.

Available key	Function
1	To select mirror image (1) J
2	To select mirror image (2) L
3	To select mirror image (3) f
4	To select mirror image (4) 1
END	To return to editing menu

[NOTE] If pressing the <END> key without selecting the number, the current mirror image is retained and then the editing menu appears.

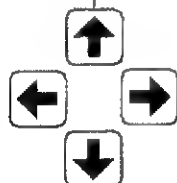
6 Setting hoop feed (1)

The hoop feed point for the X and Y carriages can be set so that a hoop is easily attached or removed to make an operation such as material attachment smooth while the machine suspends.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

6

Move to HOP > ENT
H O P : X □ □ □ mm Y □ □ □ mm
SewEND Hoop: Menu



ENTER

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

1. Press the <6> key to select [HOP].

The latest set coordinates of the hoop feed point are displayed on the second row until the <ENTER> key is pressed.

When the <ENTER> key is pressed, the current coordinates of the needle are displayed, then the editing menu is displayed.

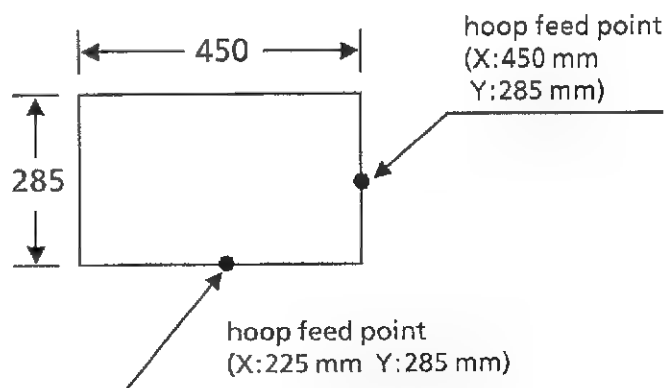
The origin for the coordinates of the hoop feed point is the upper left point in the maximum moving area for the X and Y carriages. (unit: mm)

2. Using the jog keys, move the needle to the hoop feed point.

3. After moving the needle, press the <ENTER> key. That coordinates appear then the editing menu is displayed.

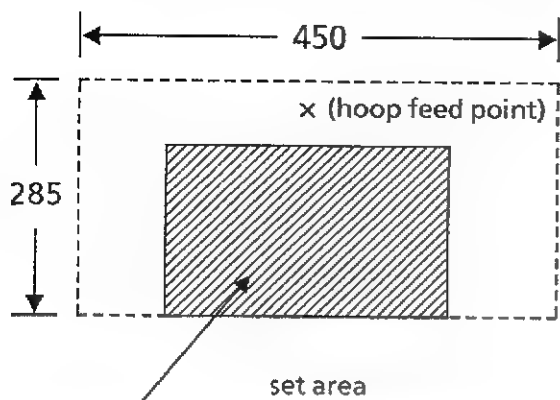
Available key	Function
	To move carriage and set hoop feed point
ENTER	To store coordinates
END	To return to editing menu
*	To select AUTO or MANUAL for hoop feed at sewing end

Example:



6 Setting hoop feed (2)

The hoop feed point can be set outside the area.



Area over

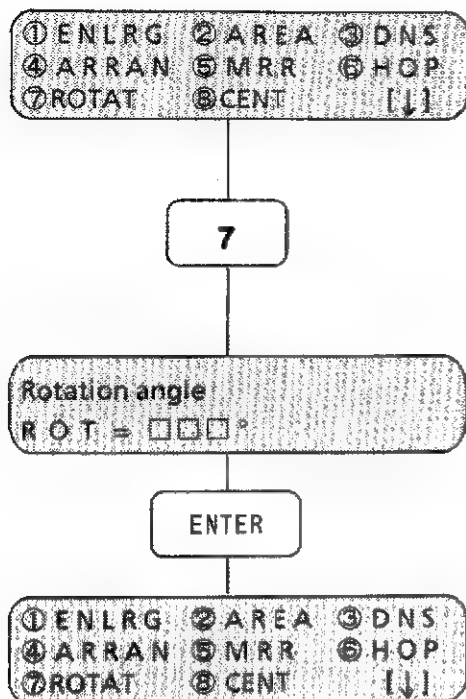
1. If starting sewing with the hoop feed point set outside the area, "Area over" appears. In that case, using the jog keys, move the needle to the sewing start point in the area.

Mov N STR-P TK

2. "Mov N STR-P." appears. The hoop feed point will be set in the area to sew.

7 Rotating (1)

Letters, symbols and patterns can be rotated together counterclockwise in 1° increments.



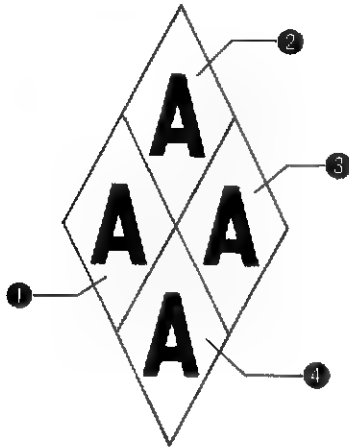
1. Press the <7> key to select [ROTAT].
2. Press the numeric key to set the rotation angle. The angle can be set between 0°-359°.
3. After the angle is set, press the <ENTER> key. The editing menu will appear.

Available key	Function
Alphanumeric key	To set rotation angle
C	To set default (0°)
END	To return to editing menu
ENTER	To store typed value
	When inputting a character (pattern) data in the data reading & sewing mode, if the data includes a return code (↵), rotation angle can be changed only in 90 degrees increments. (↑ = 90°, ← = 180°, ↓ = 270°, → = 0°)

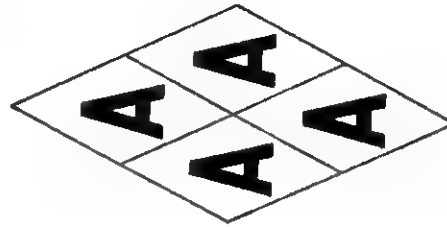
[NOTE1] If the <CLEAR> key is pressed before pressing the <END> key, the rotation angle is set to 0°.

[NOTE2] Rotating a combination of plural letters or patterns with the arrows (\uparrow , \downarrow , \leftarrow and \rightarrow) might cause each piece of the combination to slip out of place.

i) Rotation angle is 0°



ii) Rotation angle is 90°



As shown above, each piece of the combination is sewn properly, but the position between them slips.

Setting the individual ratios for the arrows to $\square.00$ prevents this problem to some extent.

i) For example, when entering ①, ②, ③ and ④ as the pattern with the arrows, the display shows:

Setting the rotation angle to 000° , the monogram will be sewn as shown in the picture on the left.

ii) Also, when entering ①, ②, ③ and ④ as the pattern with the arrows, and setting the rotation angle to 090° , the monogram will be sewn as shown in the picture on the right.

8 Centering (1)

The aligned letters can be centered.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

8

Centering
① □ ② □ ③ □ ④ □ ⑤ □
⑥ □ ⑦ □ ⑧ □ ⑨ □

1

~

9

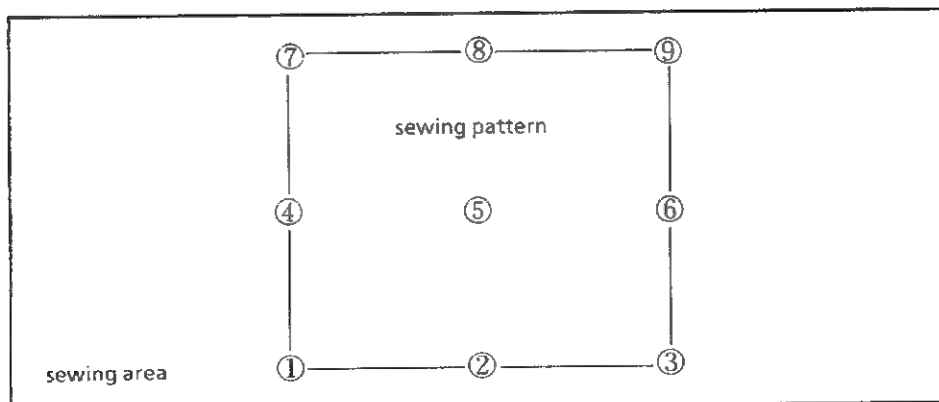
① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

1. Press the <8> key to select [CENT].

2. Then the editing menu appears.

Available key	Function
① ~ ⑨	Select the centering point of a monogram or letter (See the figure below.)

Sewing start points (Numbers correspond to the numbers for Centering points above.)



operator position

Sewing start point

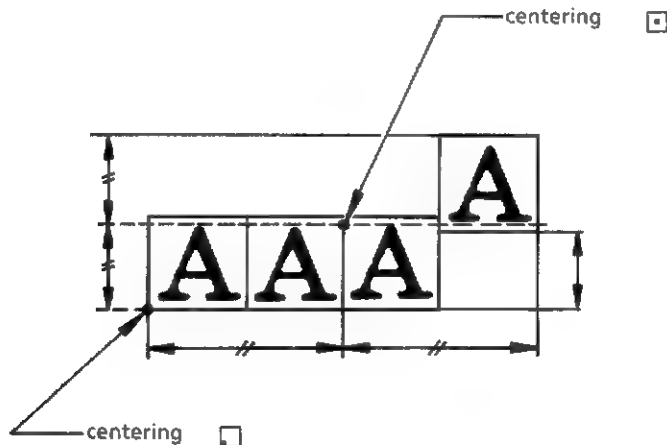
Ex. 1 When monogram data includes arrow:

A A A ↑ A

Set value in the editing:

1. Horizontal arrangement
2. Individual size ratio for ↑ is 9.00.

<Finishing, sewing start point>



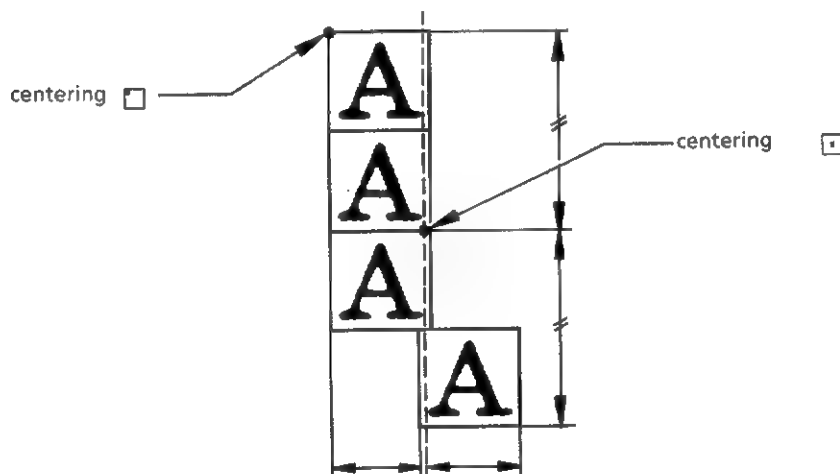
Ex. 2 When monogram data includes arrow:

A A A → A

Set value in the editing:

1. Vertical arrangement
2. Individual size ratio for → is 9.00.

<Finishing, sewing start point>



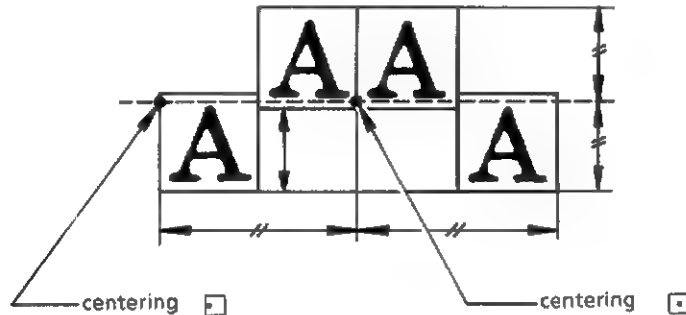
Ex. 3 When monogram data includes arrows:

A ↑ A A ↓ A

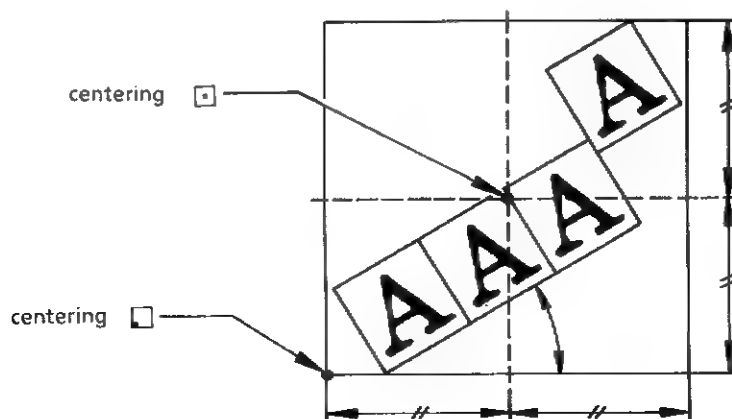
Set value in the editing:

1. Horizontal arrangement
2. Individual size ratios for both ↑ and ↓ are 9.00.

<Finishing, sewing start point>

**Ex. 4** When rotating data in Ex. 1 for 30 degrees

<Finishing, sewing start point>



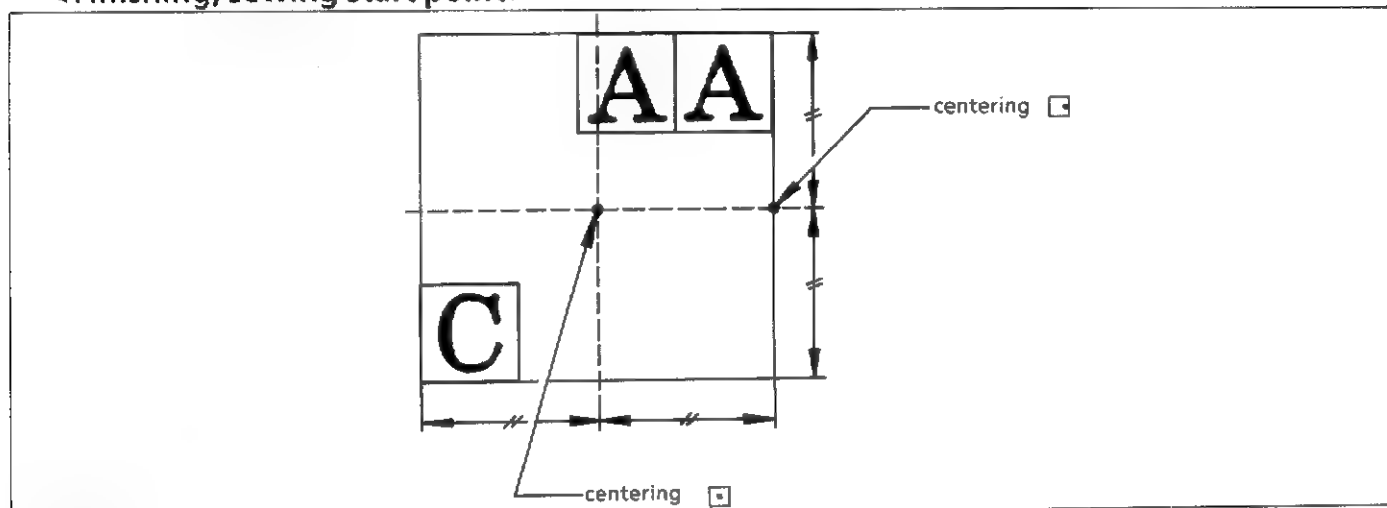
Ex. 5 When monogram data includes arrow:

A A ↓ ↓ ← ← ← ← C

Set value in the editing:

1. Horizontal arrangement
2. Individual size ratios for both ↓ and ← are 9.00.

<Finishing, sewing start point>



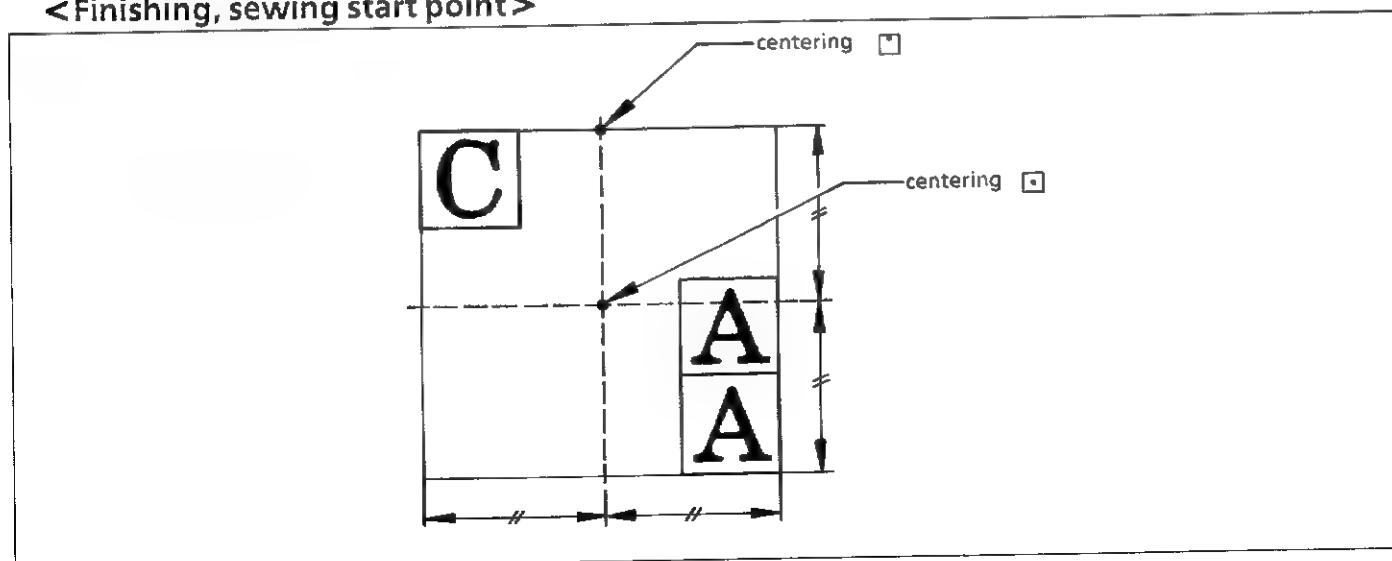
Ex. 6 When monogram data includes arrow:

A A ← ← ↑ ↑ ↑ ↑ C

Set value in the editing:

1. Vertical arrangement
2. Individual size ratios for both ← and ↑ are 9.00.

<Finishing, sewing start point>

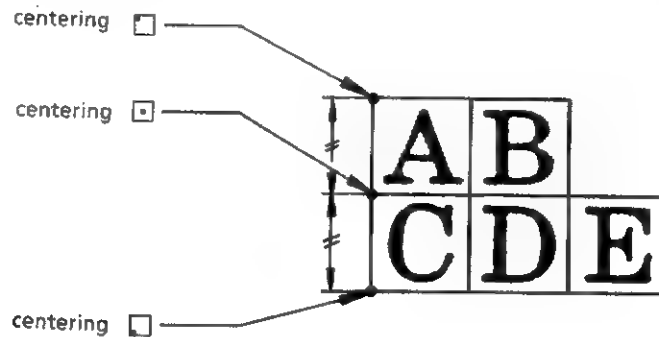


Ex. 7 When monogram data includes return code:

A B ☒ C D E

Set value in the editing:

1. Horizontal arrangement
2. Size ratios for all letters are the same.

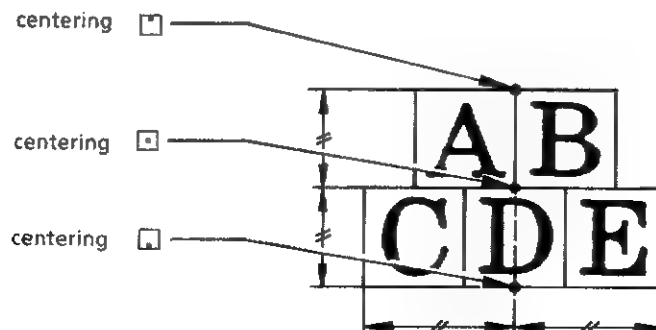


Ex. 8 When monogram data includes return code:

A B ☒ C D E

Set value in the editing:

1. Horizontal arrangement
2. Size ratios for all letters are the same.

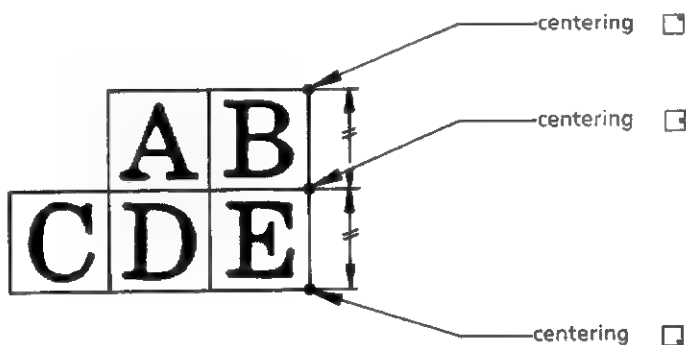


Ex. 9 When monogram data includes return code:

A B ☐ C D E

Set value in the editing:

1. Horizontal arrangement
2. Size ratios for all letters are the same.

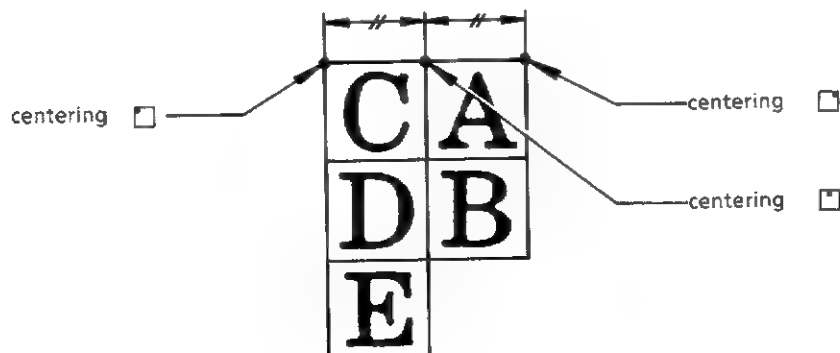


Ex. 10 When monogram data includes return code:

A B ☐ C D E

Set value in the editing:

1. Vertical arrangement
2. Size ratios for all letters are the same.

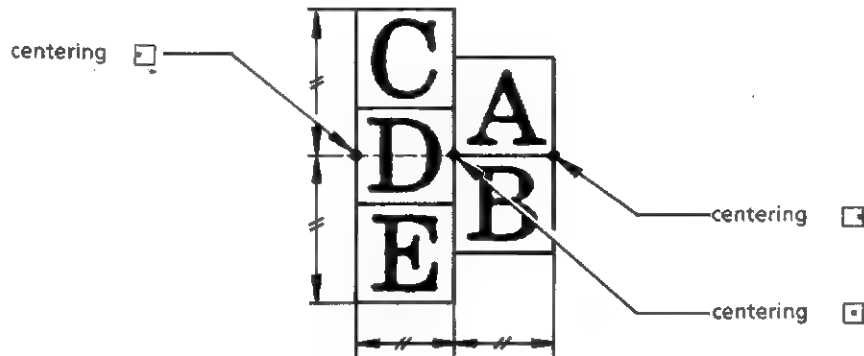


Ex. 11 When monogram data includes return code:

A B ☒ C D E

Set value in the editing:

1. Vertical arrangement
2. Size ratios for all letters are the same.

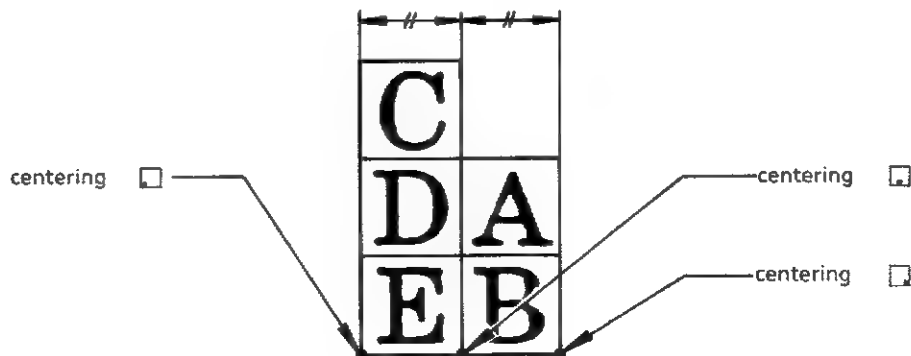


Ex. 12 When monogram data includes return code:

A B ☒ C D E

Set value in the editing:

1. Vertical arrangement
2. Size ratios for all letters are the same.

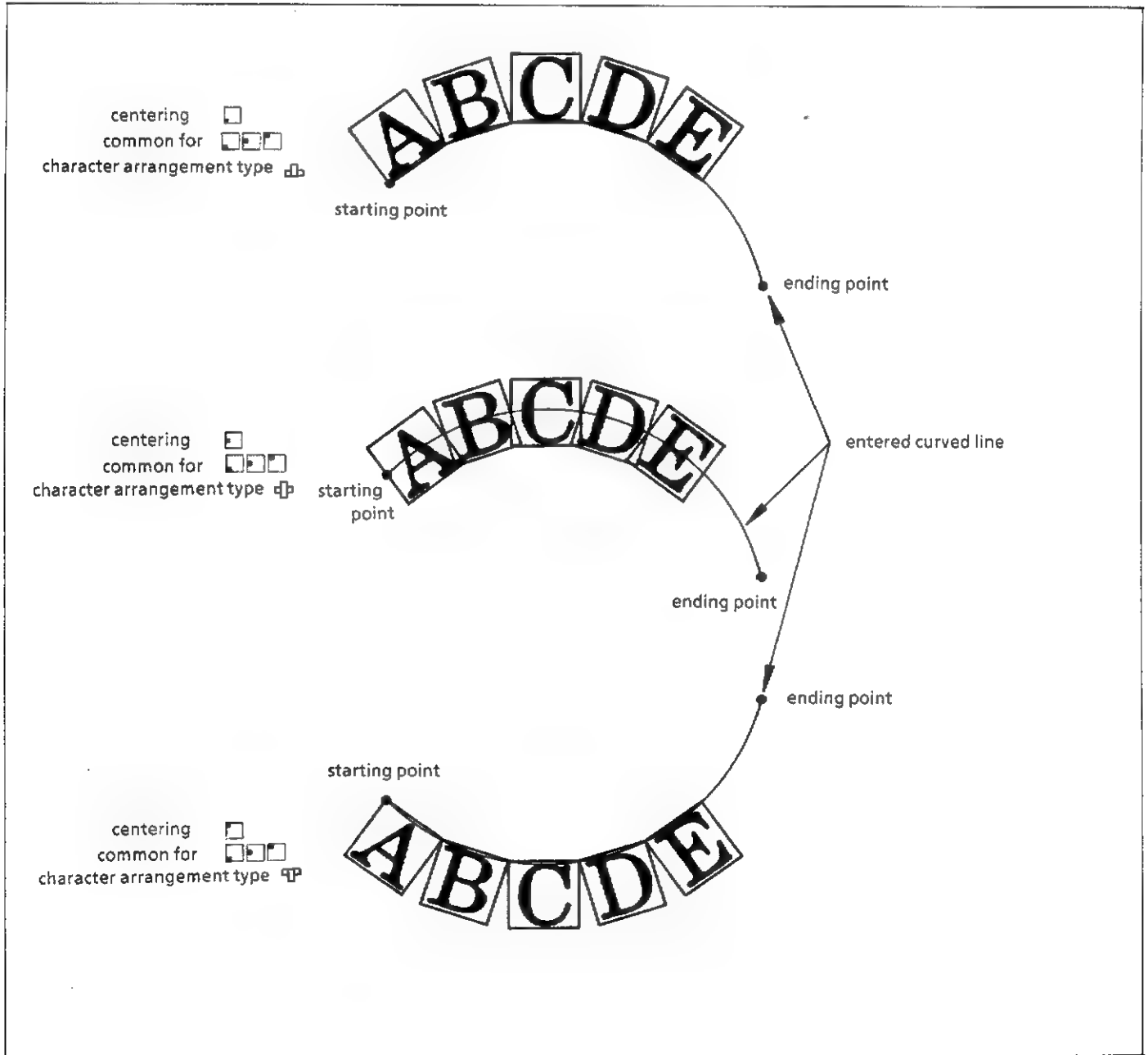


Ex. 13 When arranging monogram data:

A B C D E

Set value in the editing:

1. Arranging on the curved line [ALL]
2. Size ratios for all letters are the same.

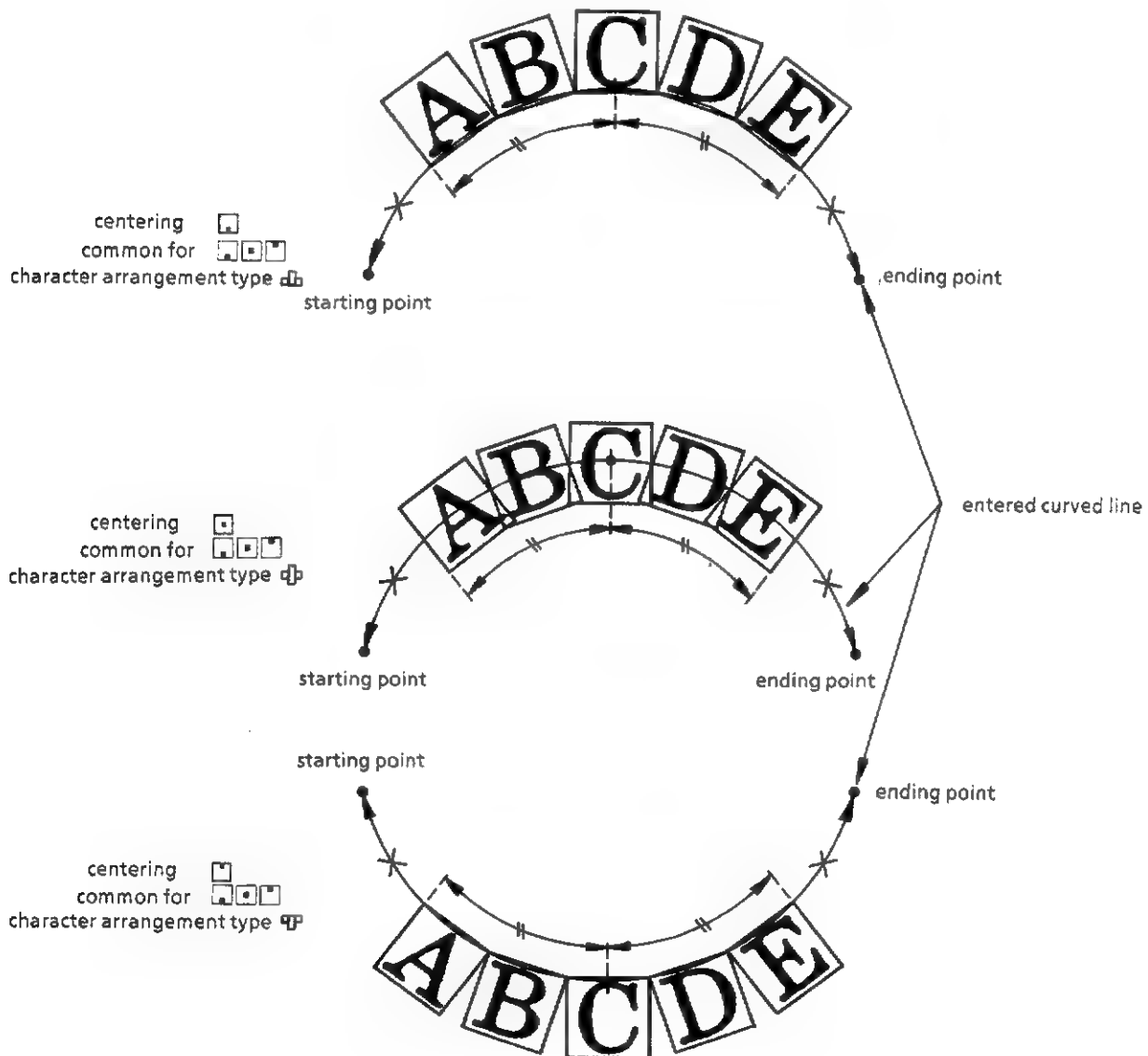


Ex. 14 When arranging monogram data:

A B C D E

Set value in the editing:

1. Arranging on the curved line [ALL]
2. Size ratios for all letters are the same.

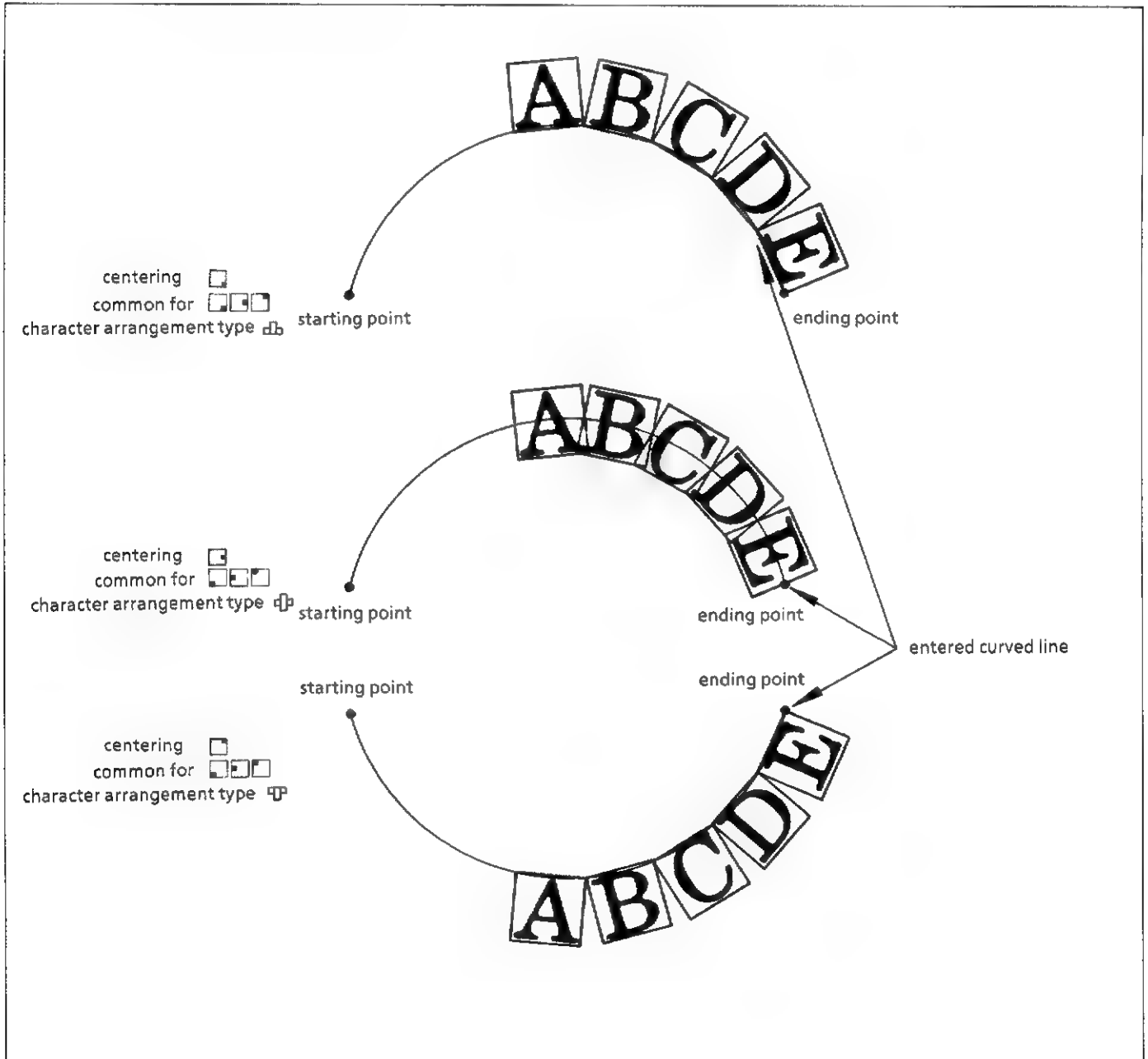


Ex. 15 When arranging monogram data:

A B C D E

Set value in the editing:

1. Arranging on the curved line [ALL]
2. Size ratios for all letters are the same.

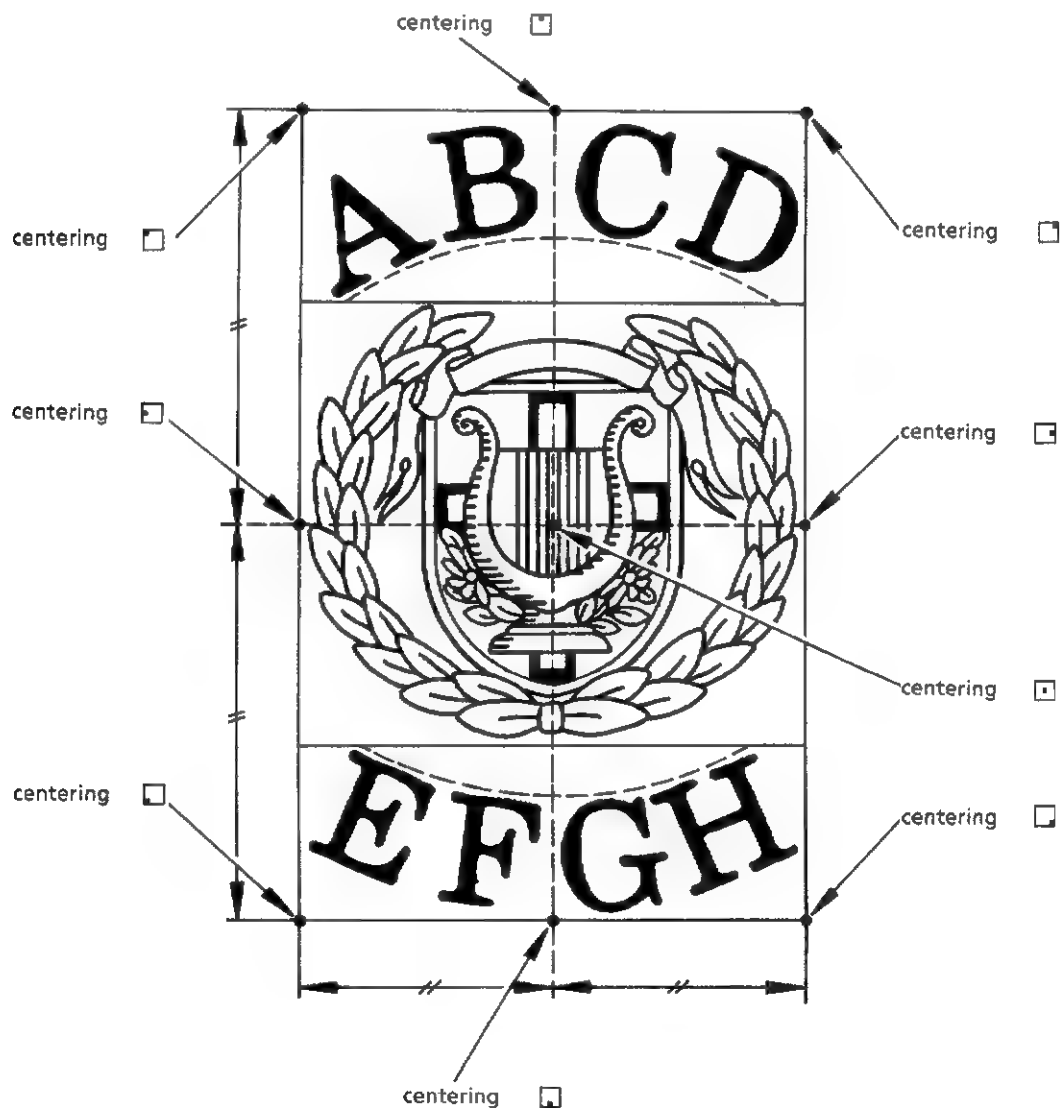


Ex. 16 When arranging monogram data:

A B C D ☆ E F G H

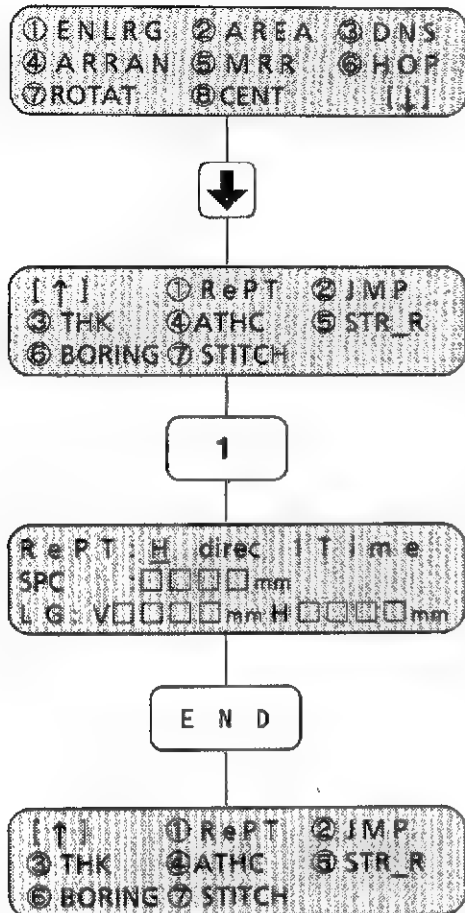
Set value in the editing:

1. Arranging on the curved line [EACH]
2. Size ratios for all letters are the same.



9 Setting repeat sewing (1)

A monogram can be sewn repeatedly, horizontally or vertically.



1. When the first screen in the editing menu is displayed, press the **<[↓]>** key to display the second screen.

2. Press the **<1>** key to select [RePT].

3. In default, the direction is horizontal and the repeat time is 1.

By pressing the **<[↓]>** or **<[↑]>** key, vertical and horizontal are selected alternately.

4. After setting, press the **<ENTER>** key to store the direction. The cursor will move to the repeat times. Type repeat times using the number key.

5. Press the **<ENTER>** key to store the times.

Available key	Function
ENTER	To store typed value To select distance and repeat times (cursor moves)
Alphanumeric key	To type repeat times and space
↑ ↓	To switch direction (Horizontal ↔ Vertical)
C	To set default (horizontal, 1 time, space 000 mm)
END	To return to editing menu

9 Setting repeat sewing (2)

A monogram can be sewn repeatedly, horizontally or vertically.

<Exercise 1>

Set the vertical repeat sewing to 2 times for the letters ABC and put a 5 mm space between them.

A B C
↓ 5 mm
A B C

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]



[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

1

RePT: H direc 1 Time
SPC: 000 mm
L G: V□□□ mm H□□□ mm



RePT: V direc 1 Time
SPC: 000 mm
L G: V□□□ mm H□□□ mm

2

ENTER

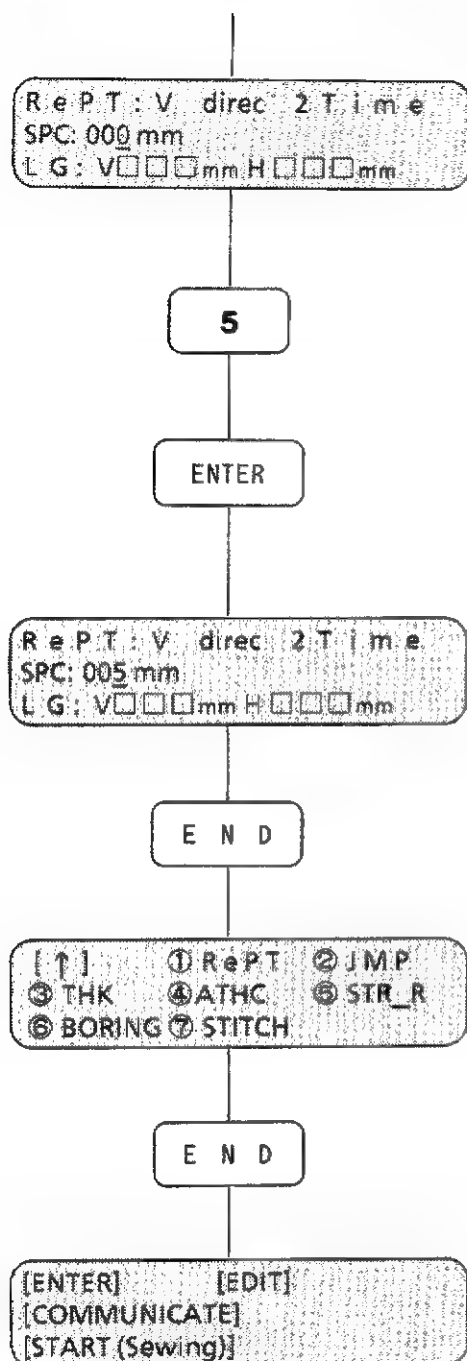
1. After entering the data, select [EDIT].

2. Press the <[↓]> key to display the second screen in the editing menu.

3. Press the <1> key to select [RePT].

4. Press the <[↑]> key to set the vertical.

5. Press the <2> key, and then the <ENTER> key to set the repeat times.



6. Press the **<5>** key, and then the **<ENTER>** key to set the space.

[NOTE] The total size of the data (including the space) will be displayed at the LNG on the third row.

7. Now the second screen of the editing menu appears.

8. Press the **<END>** key to return to the main menu.

<Exercise 2>

Set the horizontal repeat sewing to 2 times for the letters ABC and put a 5 mm space between them.

A B C $\xrightarrow{5\text{ mm}}$ A B C

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]



[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

1

RePT: V direc 1 Time
SPC : 000mm
L G: V□□mm H□□mm



RePT: H direc 1 Time
SPC : 000mm
L G: V□□mm H□□mm

2

ENTER

1. After entering the data, select [EDIT].

2. Press the <[↓]> key to display the second screen in the editing menu.

3. Press the <1> key to select [RePT].

4. When "V" (vertical) is displayed, press the <[↓]> key to change it to "H" (horizontal).

5. Press the <2> key, and then the <ENTER> key to set the repeat times.

```

RePT: H direc 2 Time
SPC : 000mm
LG : V□□□mm H□□□mm

```

5

ENTER

```

RePT: H direc 2 Time
SPC : 005mm
LG : V□□□mm H□□□mm

```

END

```

[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

```

END

```

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

```

6. Press the <5> key, and then the <ENTER> key to set the space.

[NOTE] The total size of the data (including the space) will be displayed on the third row.

7. Press the <END> key to return to the second screen of the editing menu.

8. Press the <END> key to return to the main menu.

[NOTE 1] After setting the repeat sewing, the set repeat times will be displayed during sewing.

```

ABC
NBN : 1
STYL : 0.1 V 1/2

```

For example, when the vertical repeat is set to twice, "V 1/2" is displayed on the right of the third row during the first sewing.

[NOTE 2] To cancel the repeat sewing in the sewing mode after setting:

Ex. When setting the repeat times to 3:

During the second sewing.

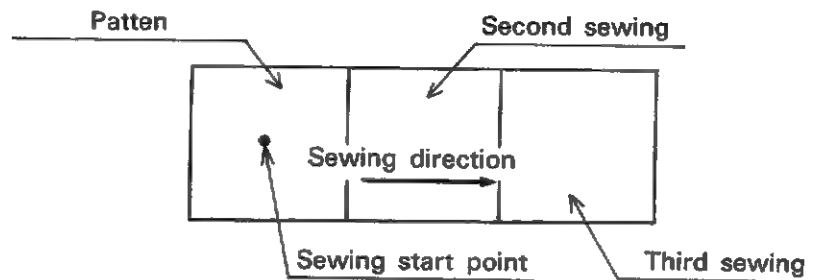
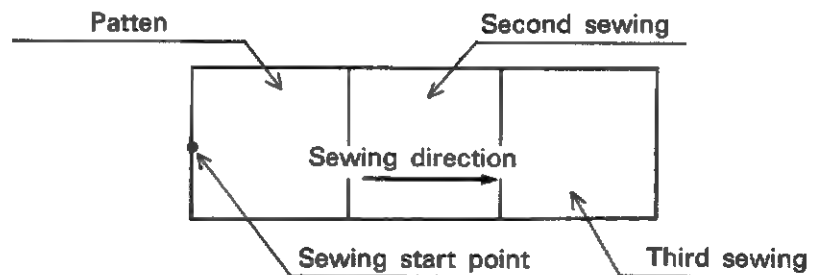
- When the <CLEAR> key is pressed, the machine cancels the second sewing and gets ready for the third sewing.
- When the <AC> key is pressed, the machine cancels both the second and third sewing, and gets ready for the first sewing.

[NOTE 3] If character (pattern) data was entered one by one in the entry mode, going back to the previous character (pattern) using the <back> key is possible. But if it was inputted using repeat function, it is not possible. (For example, once you started sewing the same characters (patterns) for the second time, going back to the characters sewn for the first time to fix them is not possible.)

Sewing start point with the repeat sewing

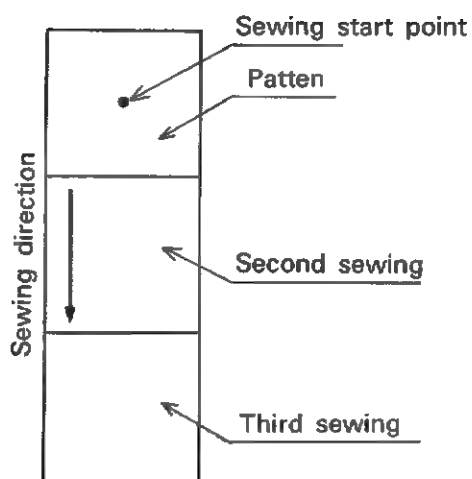
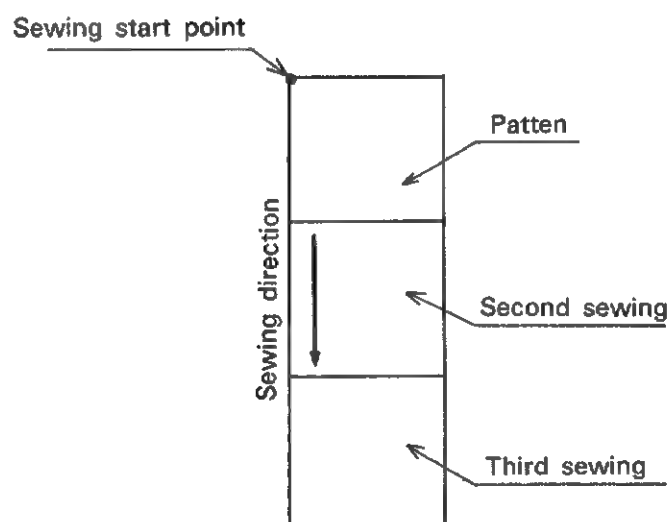
<Ex. 1>

RePT: H direc 3 T m e
 SPC : ☐☐☐ mm
 LG: V ☐☐☐ mm H ☐☐☐ mm

1. Horizontal (Centering: ☐)2. Horizontal (Centering: ☐)

<Ex. 2>

RePT: V direc 3 T: 1 m e
 SPC: ☐☐☐ mm
 LG: V ☐☐☐ mm H ☐☐☐ mm

1. Vertical (Centering: ☒)2. Vertical (Centering: ☐)

[NOTE] Pressing the <CLEAR> key then the <END> key returns data to the default value "RePT: H DR 1Time" (non-repeat sewing).

10 Setting automatic jump

The automatic jump functions when the data includes stitches longer than the set stitch length.
By this function, the machine continues to sew at the set speed.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]



[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

2

Automatic jump
① 12.7mm ② 4.8mm

1

2

[↑] ① RePT ② JMP
③ THK ④ ATHC

1. Press the <[↓]> key to display the second screen of the editing menu.

2. Press the <2> key to select [JMP].
The default stitch length is displayed.

3. To select ①, press the <1> key.
To select ②, press the <2> key.
Then press the <END> key to return to the editing menu.

Available key	Function
Alphanumeric key	To select ① or ②
END	To return to editing menu

In the selected range, the sewing speed is regulated according to the stitch length as shown below.

Stitch length (mm) Range	0.1 – 4.8	4.9 – 8.2	8.3 – 12.7
1	1000rpm	650rpm	450rpm
2	750	600	450
3	650	550	450
4	550	500	450
5	500	450	400
6	350	350	350

11 Indicating material thickness

Indicating the material thickness improves the sewing quality of any weight of material.



3



1

2

Thick material

Thin material

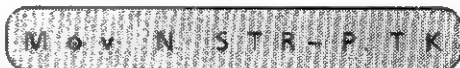


1. Press the <3> key to select [THK].

2. To select [①Thick], press the <1> key.
To select [②Thin], press the <2> key.

3. After pressing the <1> or <2> key, the editing menu is displayed.

[NOTE] The selected thickness is displayed when setting the sewing start point in the sewing mode.

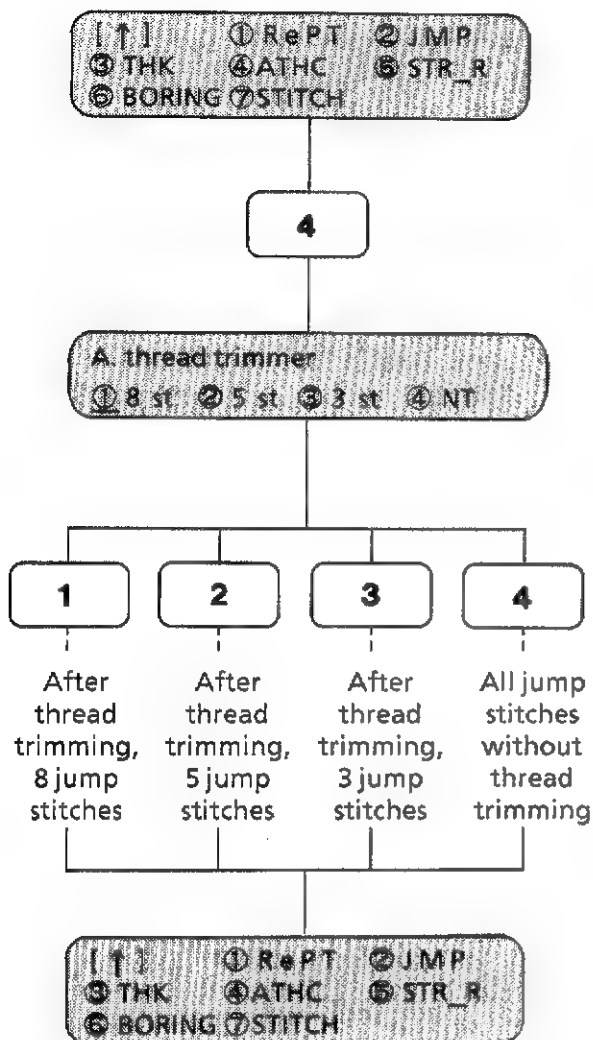


Reference:

1. Thick material fabric for coats, corduroy, denim, leather
Thin material (maximum 1 mm) georgette, broadcloth, tricot fabric, cuprammonium rayon (cupro), gingham
2. When sewing thin material, a piece of non-woven fabric or paper attached to the back for support will improve embroidery quality.

12 Setting automatic thread trimmer

The automatic thread trimmer operates according to the successive number of jump stitches in the pattern data. (This function is not available for the prepared letter data supplied by Brother.)



1. Press the <4> key to select [ATHC].

2. Indicate the jump stitch number fixed in the data.

3. The editing menu is now displayed.

[NOTE] This automatic thread trimmer function is available only when the data to be sewn includes a 3, 5 or 8-jump stitch.

13 Setting needle return to sewing start point

In data reading and sewing mode (with TFD format data only), and when DIP switch 3 is ON (sewing start point is the position of the first stitch) in the editing mode, needle return to the sewing start point can be set.

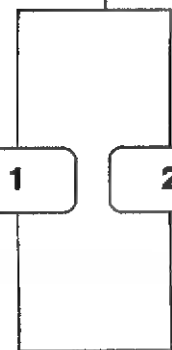
① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]



[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

5

Start __ P return
① On ② Off



[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

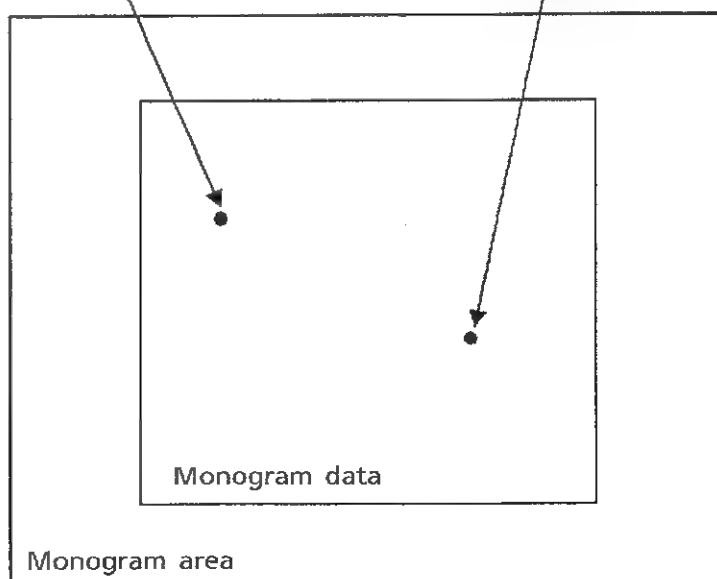
1. Press the <↓> key to get the next editing screen.

2. Press the <5> key and select [STR_R].

3. If you wish to return the needle to the sewing start point, press the <1> key. If not, press the <2> key.

sewing start point
(Needle returned.)

sewing end point
(Needle didn't return.)



14 Setting boring (1)

Boring setting is possible only with the sewing data made for boring. Since the sewing machine does not recognize if the data is for boring or not, please double-check before sewing.
Before sewing, attach the boring knife and the needle plate for boring (Both are optional).

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]



[↑] ① RePT ② JMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

6

BORING : NO
SHIFT : NO



ENTER

BORING : YES
SHIFT : NO



ENTER

1. Press the $\langle \downarrow \rangle$ key to get the second screen in the editing mode.

2. Press the $\langle 6 \rangle$ key to select [BORING].

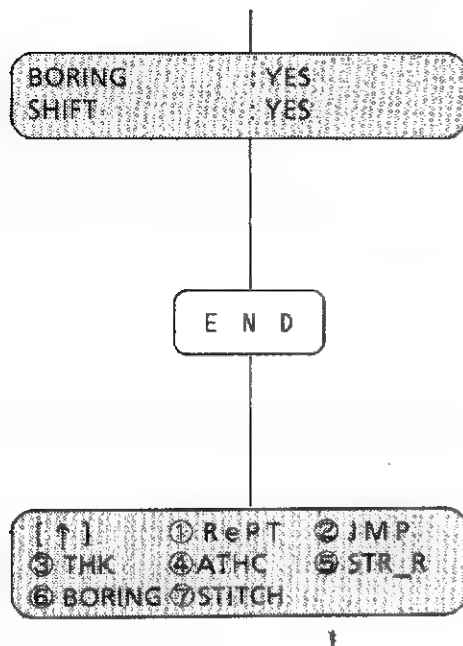
3. Press the $\langle \uparrow \rangle$ key to select BORING: YES.
(If the $\langle \downarrow \rangle$ key is pressed, BORING: NO will be selected.)

4. Press the $\langle \text{ENTER} \rangle$ key.
Now the BORING: YES is set.

5. Press the $\langle \uparrow \rangle$ key to select SHIFT: YES.
(If the $\langle \downarrow \rangle$ key is pressed, SHIFT: NO will be selected.)

6. Press the $\langle \text{ENTER} \rangle$ key.
Now the SHIFT: YES is set.

14 Setting boring (2)



7. Press the <END> key to return to the editing menu.

- [NOTE 1] If boring data has shift data in it, set the machine to "SHIFT:NO."
If boring data does not have shift data in it, set the machine to "SHIFT:YES."
In both cases, shifting amount is 15 mm.
- [NOTE 2] Boring or shifting is only possible with the needle no.1.
- [NOTE 3] With the boring set to YES, the following editing cannot be done.
- Enlarging/Reducing
 - Mirror image
 - Returning the needle to the start point
- To get the fine boring result, arranging on the curved line is not recommended.

15 Selecting stitch type

Only with the brother type letter data, stitches can be set either to Satin or to Tatami. The range of the Tatami sewing pitch is from 2.0 mm to 9.9 mm.

① ENLRG ② AREA ③ DNS
④ ARRAN ⑤ MRR ⑥ HOP
⑦ ROTAT ⑧ CENT [↓]

1. Press the <↓> key to get the second screen in the editing mode.



[↑] ① RePT ② IMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

2. Press the <7> key to select [STITCH].

7

Stitch select
① Satin ② Tatami

3. If you want Satin stitches, press the <1> key.
If you want Tatami stitches, press the <2> key.

1

2

Stitch select
Tatami PCH = . mm

2

5

ENTER

4. If you wish to set the Tatami pitch (stitch length used in Tatami sewing) to 2.5 mm, press <2>, <5> and then the <ENTER> key.

[↑] ① RePT ② IMP
③ THK ④ ATHC ⑤ STR_R
⑥ BORING ⑦ STITCH

5. The display will return to the editing menu.

IV SEWING

1 Explanation of sewing function

Calculating now

Sewing (function selection) mode

Select one of the sewing functions in this menu.

Mov N STR-P TK
NBN: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
TSt: ☐ ☐ ☐ ☐ ☐ Co: ☐ ☐

1

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
NBN: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Sewing

In this mode, sewing may be begun.

Resew>STR AC>AC
NBN: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
RSt: ☐ ☐ ☐ ☐ ☐ Co: ☐ ☐

Suspension

An emergency stop results suspension.

2

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
STYL 01 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Test sewing mode

Test sewing is done in this mode.

3

CCN: ☐ ☐ TCCN: ☐ ☐
NBN: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Needle bar setting mode

Needle bar order (color order) may be set.

4

NBN: ☐

Needle bar selecting mode

To select needle bars.

5

Retrn>HOOP FEED

Hoop feed mode

To set hoop feed point.

6

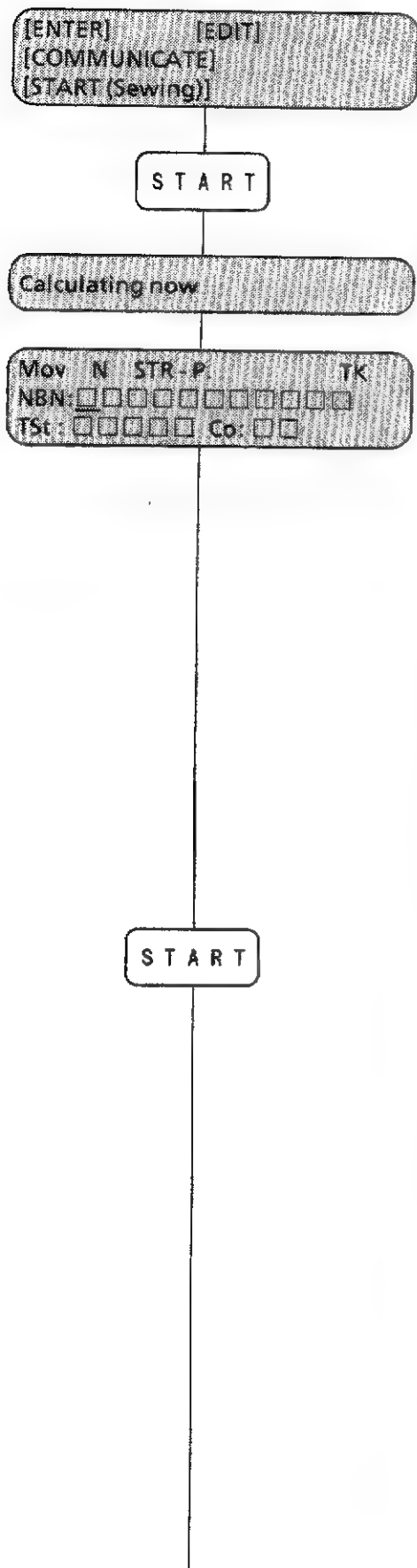
Resew>STR AC>AC
NBN: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
RSt: ☐ ☐ ☐ ☐ ☐ Co: ☐ ☐

Stitch by stitch sewing mode

To sew stitch by stitch during suspension.

2 Sewing function (1)

Press the <START> key to enter the sewing mode.



In the main menu

1. Press the <START> key.

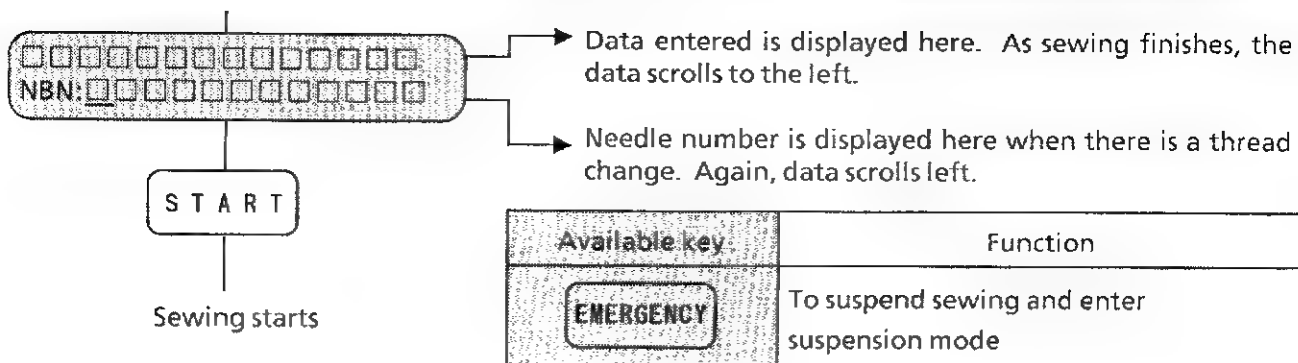
2. Set the first-needle-drop point (sewing start point) using the jog keys.

[NOTE] In this operation, the needle may go out of sewing area. If the start point goes out of sewing area, the error message "AREA OVER" is displayed and sewing will not begin when the <START> key is pressed.

If the Area over message appears:

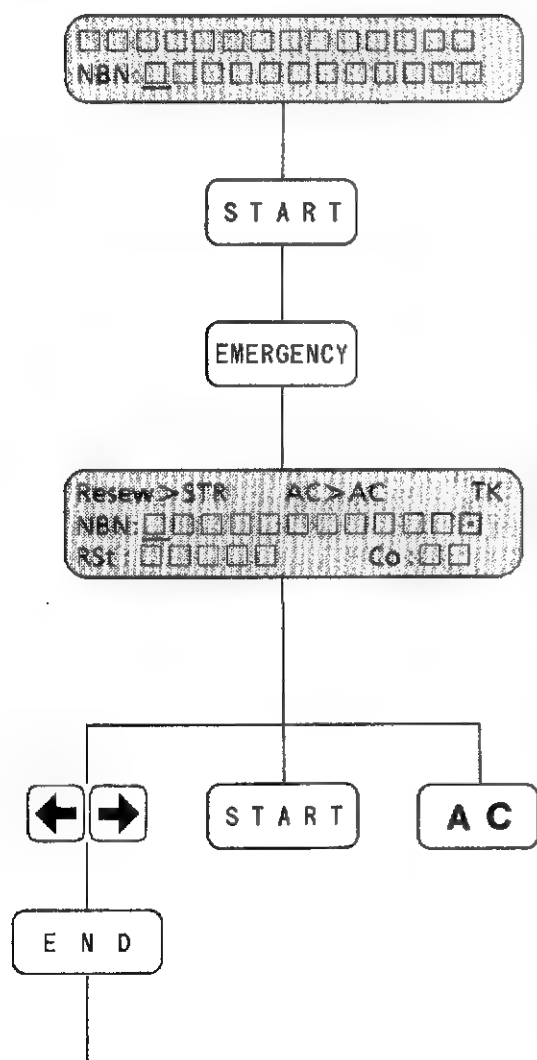
- ① Reset sewing start point by using the jog keys.
- ② Press the <END> key and select [EDIT] in main menu to reset the area.

Available key	Function
START	To select sewing mode
*	To select test sewing mode Press <EMERGENCY> key to return to sewing (function selection) mode.
NEEDLE SET	To select needle bar setting mode Press <END> key to return to the sewing (function selection) mode.
NEEDLE SELECT	To select needle bar selecting mode. Press <END> key to return to sewing (function selection) mode.
HOOP FEED	To feed hoop Press it again to return to sewing (function selection) mode.
ONE STITCH	To sew stitch by stitch
THREAD SENSOR	To enter bobbin thread counter/thread breakage detector mode
← → ↑ ↓	To set sewing start point
THREAD TRIMMING	To trim thread
END	To return to main menu






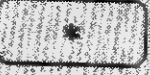
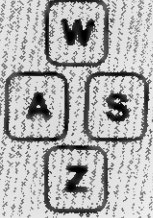
<Suspension mode>

Press the <EMERGENCY> key during sewing to enter the suspension mode.



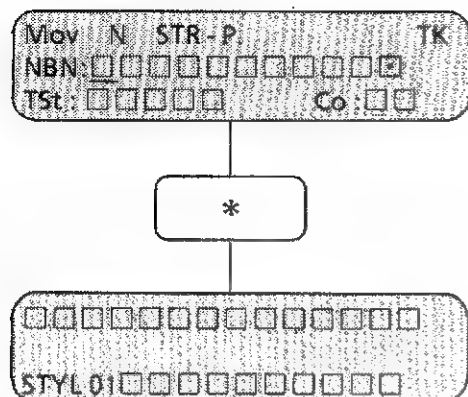
Available key	Function
ONE STITCH	To sew stitch by stitch
START	To restart
← →	<p>1. To stitch without thread backward and forward Press < ← > key to stitch backward and < → > key to stitch forward. Press < ← > key and < → > key once for one stitch.</p> <p>2. To stitch without thread automatically, press < ← > and < → > keys for more than one second. Press <EMERGENCY> key to stop.</p>
HOOP FEED	To feed hoop (hoop feed point can be changed with ↓ ↑ ← → keys.)
NEEDLE SELECT	To select needle bar

Continued on the next page.

Available key	Function
	To enter bobbin thread counter/thread breakage detector mode
	To cancel sewing and go back to the sewing (function selection) mode.
	To stop stitch without thread automatically
	To change stitching without thread (backward/forward) to 100 stitches at a time
	<p>To move the needle (the hoop and the holder base) in 0.1 mm increments.</p> <p>(W = ↑, Z = ↓, A = ←, S = →)</p>

2 Sewing function (4)

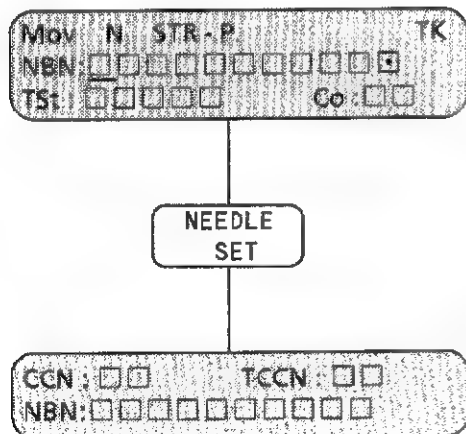
<Test sewing mode>



1. Press the <*> key to start test sewing entered data.

2. During test sewing, the entered data scrolls to the left. After test sewing, the machine returns to the sewing (function selection) mode.

<Needle bar setting mode>



1. Press the <NEEDLE SET> key and set the order of needle bars.

Available key	Function
Alphanumeric key	To type needle bar order
← →	To move cursor
ENTER	To set and release a pause during sewing (set & release) In " □□S", the "S" stands for a pause (suspension mark).
AC	To set needle bar order to default (Needle bar order is set, repeating in order from 1 to 9.)
END	To return to sewing (function selection) mode
NEEDLE SET	To select needle bar setting mode

<Needle bar selecting mode>

Mov N STR P TK
NBN:
TSt: Co:

NEEDLE
SELECT

NBN:

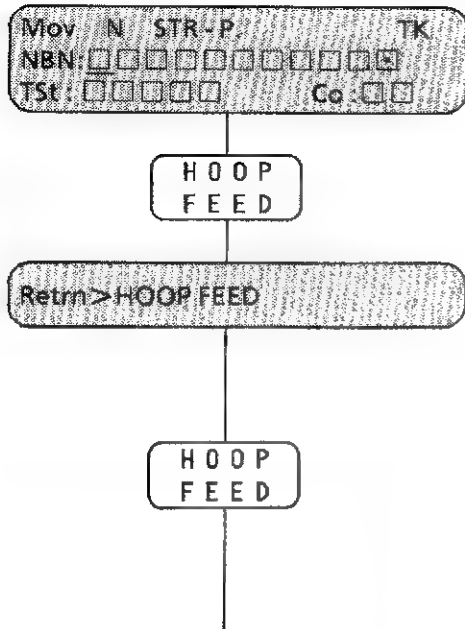
To select any needle bar for sewing and move it to the needle hole on the needle plate.

In the sewing (function selection) mode;

1. Press the <NEEDLE SELECT> key and select the needle bar using the numeric key.

Available key	Function
Alphanumeric key	To type needle number and move needle to needle hole
END	<ul style="list-style-type: none"> * To exit from needle bar selecting mode * To return to main menu or sewing mode or sewing suspension mode <p>[NOTE] After using this function, when the sewing begins, the needle bar returns to its original position.</p>

<Hoop feed mode>

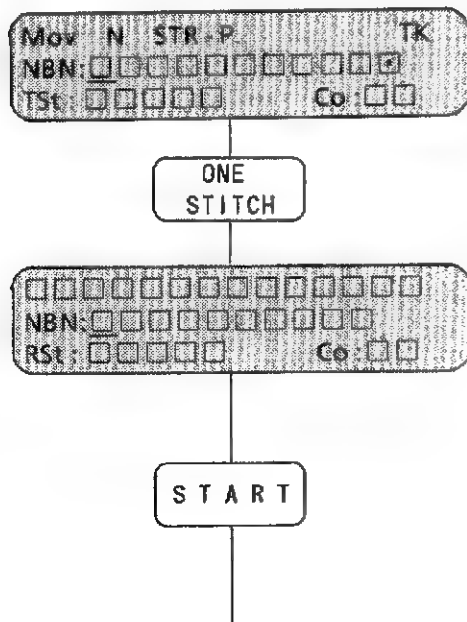


In the sewing (function selection) mode

1. Press the <HOOP FEED> key to feed hoop.

Available key	Function
HOOP FEED	To move hoop to hoop feed point, set in hoop feed mode Press it again to return hoop to place it was before and return to sewing mode or suspension mode.
EMERGENCY	To interrupt hoop feeding motion Press <HOOP FEED> key to restart.

<Stitch by stitch mode>



Stitch by stitch sewing is done during suspension.

1. Press the <EMERGENCY> key to suspend during sewing.
2. Press the <ONE STITCH> key to sew stitch by stitch.
3. After stitch by stitch sewing, press the <START>key to restart the sewing.

Ex. 1	Sewing A B
-------	------------



Store the AB. Press the <END> key to return to the main menu.

1. Press the **<START>** key to start sewing.

Calculating now

2. Set the sewing start point using the jog keys.

Mov N STR-P TK
NBN: [] [] [] [] [] [] [] [] [] []
TS: [] [] [] [] Co [] []

After the sewing start point setting, these functions are available.



Thread trimming

Stitch by stitch sewing

Hoop feed

Test sewing

Start

Needle bar setting

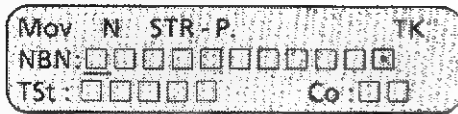
Needle bar selecting

End

<Test sewing>

To confirm the size and position of embroidery before sewing.

Ex. 1 Test Sewing for A B

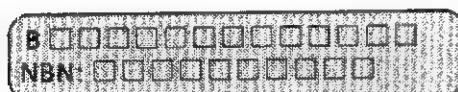
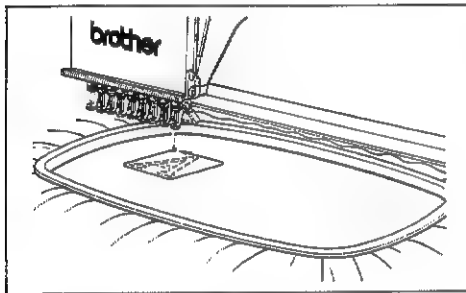


*

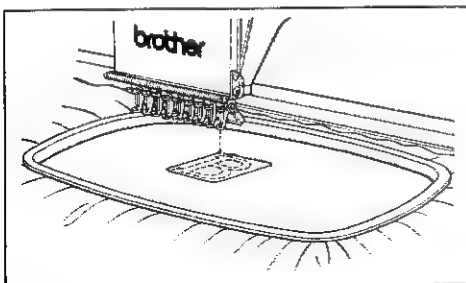


1. Press the <*> key to select test sewing.

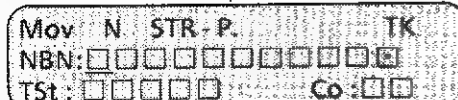
"AB" is displayed and test sewing begins.
The carriage moves along the mask line of A.



When the test sewing of A finishes, "A" will disappear from display.
Then the carriage moves along the mask line of B.



Calculating now



After test sewing, the needle returns to the sewing start point.

The display goes back to the sewing mode.

3 Sewing (3)

Press the <START> key to sew the stored letters.

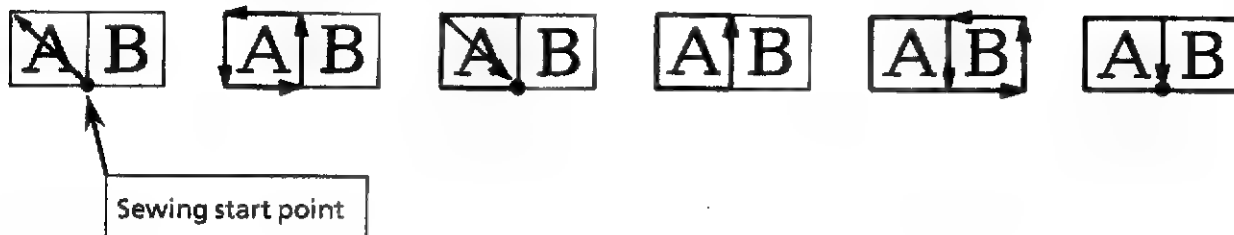
Press the <END> key to return to the main menu.

Select [EDIT] to edit the stored letters.

[NOTE1] In test sewing, only carriage moves, not needles.

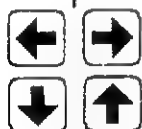
[NOTE2] Press the <EMERGENCY> key to stop test sewing.

Ex.2 Order of test stitches for AB



<Changing sewing start point after test sewing>

Mov	N	STR-P	TK
NBN	□	□	□
TSt	□	□	Co



START

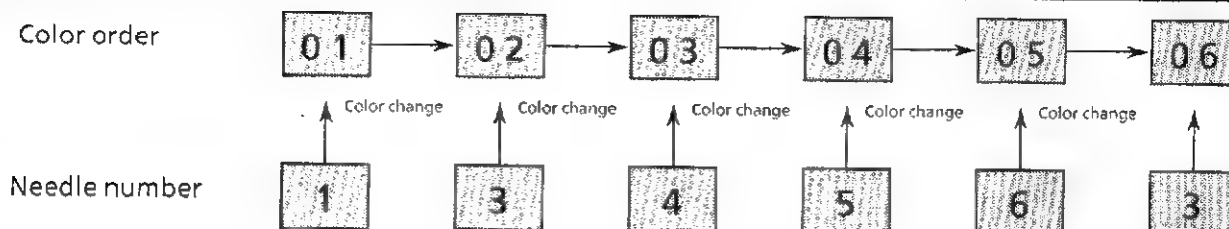
1. Re-set the sewing start point using the jog keys.

2. Do the test sewing again. If the position is correct, press the <START> key to begin sewing.

<Needle bar setting>

Ex.1

Sewing 6-color-pattern that includes 5 color changes
(Needle number ①③④⑤⑥③ are used in this pattern.)



Mov N STR-P TK
 NBN:
 TSt: Co:

NEEDLE
SELECT

CCN: 01 TCCN: 06
 NBN: 313456

1

CCN: 01 TCCN: 06
 NBN: 1

3

CCN: 02 TCCN: 06
 NBN: 3

1. Press the <NEEDLE SET> key.

2. Select the first digit of the needle bar number (NBN) 01 in the second row using the <□> key.

3. Press the <1> key.

4. The "3" is replaced with the "1". Now the needle bar number 01 is set to 1.

5. Press the <□> key to scroll letter. The "1" disappears and the next number "1" is on the cursor now.

6. Press the <3> key. During setting, the needle bar number corresponding with the color order is always displayed on the left end.

[NOTE] In case that the set needle bar number is the same as the one which was set directly before, a pause is automatically set between them.

CCN : 06 TCCN : 06
 NBN : 3□□□□□□□

Continue setting needle bar number corresponding to the color order.

E N D

7. After setting, press the <END> key.

Mov N STR-P TK
 NBN : 134563 □
 TSt : □□□□□□□□ Co: 06

[NOTE1] Color change is also set in the entry mode using the color change mark "*". In this case, changes can only be made by each letter, symbol or pattern and color cannot be changed during sewing one letter, symbol or pattern.

[NOTE2] Enter color change mark "*" using <*> key in the alphabet mode.
 Enter color change using <2-A> in the code entry mode.
 In both cases a "*" stands for a color change.

3 Sewing (6)

Ex.2

Setting a pause (suspension mark) after color change
(In case of setting a pause (suspension mark) after color change (*) of A*B.)

CCN : 01 TCCN : 02
NBN : 12 □□□□□□□□

Store the A*B. Press the <NEEDLE SET> key in the sewing (function selection) mode.



1. Select color order (CCN) 2 using the jog key <□>.

CCN : 02 TCCN : 02
NBN : 2 □□□□□□□□

ENTER

2. Press the <ENTER> key to set a pause. The "S" will be displayed after the color order.

[NOTE1] Press the <ENTER> key again to release the pause. The "S" will disappear.

[NOTE2] Pressing the <ENTER> key switches from set to release and vice versa.

CCN : 02S TCCN : 02
NBN : 2 □□□□□□□□

E N D

3. Press the <END> key after setting.

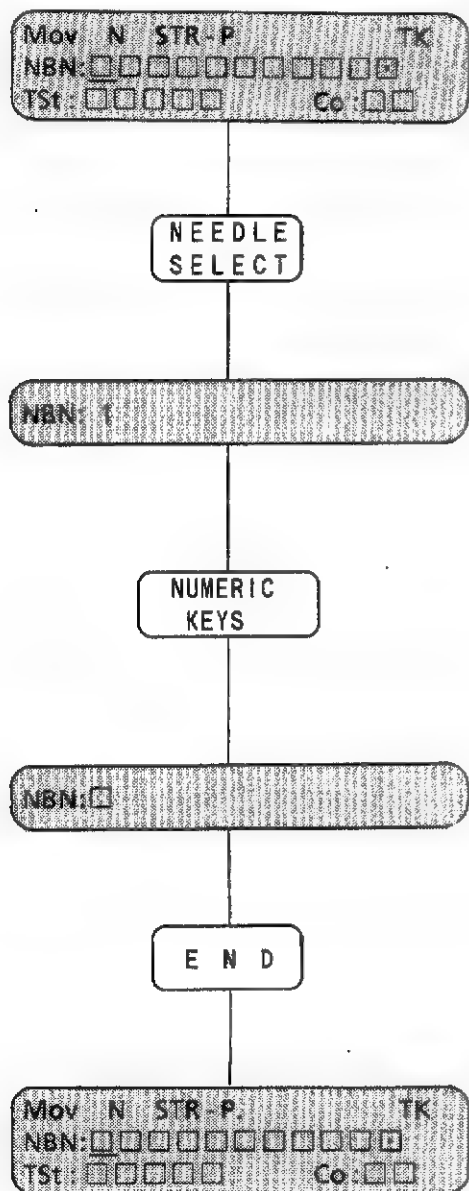
Mov N STR-P TK
NBN : 12 □
TSt : 000416 Co : 02

After the pause setting above, when the sewing is restarted, the machine sews the A then the needle bar changes automatically (color change), then suspends before sewing the B.

< Needle bar selecting >

After data entry, any needle bar can be selected in sewing (function selection) mode.
During suspension, any needle bar can be selected.
This function simply moves the needle bar case.

When using after data entry



1. Press the <NEEDLE SELECT> key.
 2. Enter the number of the required needle bar to move the needle bar.
- [NOTE] Beware of needle bar case movement when entering the number.
- The number of the moved needle bar is displayed.
3. Press the <END > key after setting. The machine will return to sewing (function selection) mode. At this time the needle bar will not move. Needle bar number in the display indicates the original needle bar.

When using during suspension

Follow the same procedure as above.
After pressing the <END> key, press the <START> key to start sewing. The original needle bar returns to its position and sewing begins.
Press the <AC> key to cancel the sewing.

<Bobbin thread counter and thread breakage detector>

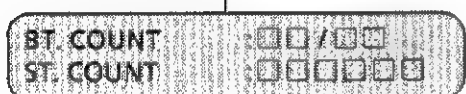
Bobbin thread counter: After each completion or cancellation of sewing, the counter number is subtracted. The machine can be set so that a notice will be given if sewing is started after the counter number became 0. The counter number can be set from 0 to 99. The counter can be set to OFF if you wish.

Thread breakage detector: This detector can be set to either ON/OFF.

The stitch counter: This counter is useful in keeping track of sewing machine operation frequency, etc.



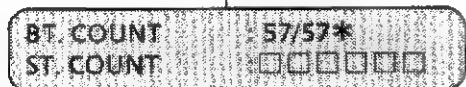
THREAD
SENSOR



5

7

*



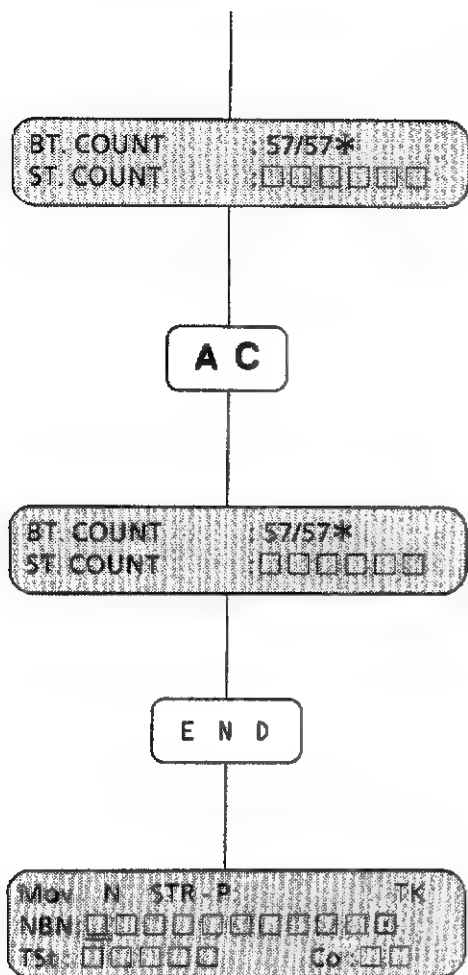
THREAD
SENSOR

1. Press the <THREAD SENSOR> key.

2. Using numeric keys, set the bobbin thread counter to 57. Press the <*> key to confirm it.

3. An "*" will be displayed next to "57" when the setting is valid.

4. Press the <THREAD SENSOR> key to switch on and off of the detector. The display does not change, but the thread breakage detector indicator lights when it is ON.



5. To clear the stitch counter setting to 0, press the <AC> key.

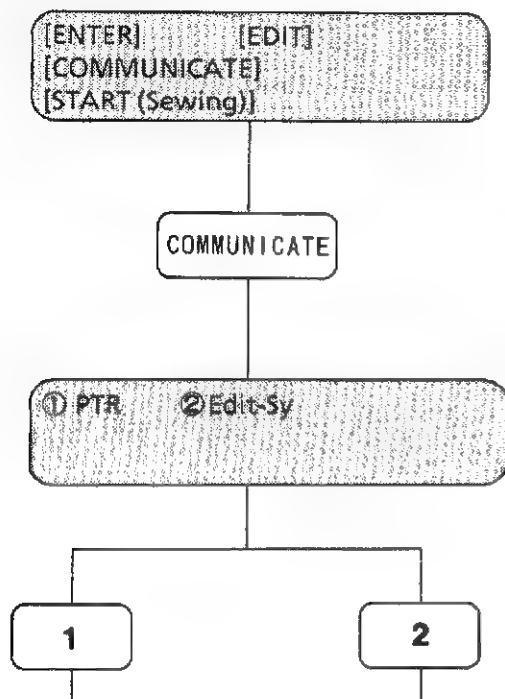
Even if the power switch of the sewing machine is turned off, the stitch counter memorizes the previous number and keeps adding the number until the <AC> key is pressed.

6. After setting the counter number, press the <END> key. The display will return to the sewing (function selection) mode.

V COMMUNICATION

1 Setting communication mode (1)

The machine can receive the embroidery data from a paper tape reader or editing system through ■ communication line.



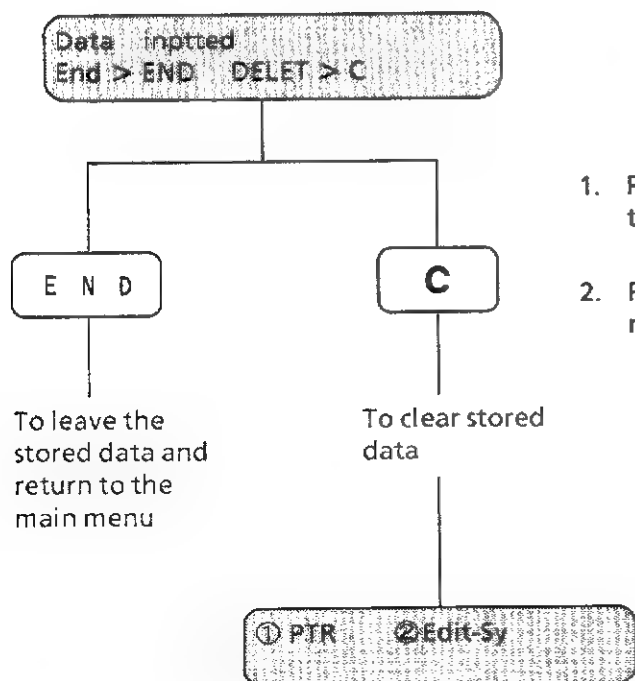
Select [COMMUNICATE] in the main menu.

1. Press the <COMMUNICATE> key.

2. Press the <1> key to read data from the paper tape.
Press the <2> key to read data from the editing system.

[NOTE1] Only one pattern's data can be received through a communication line.

[NOTE2] In case some data is already stored, the message shown below is displayed.



1. Press the <END> key to leave the stored data and return to the main menu.

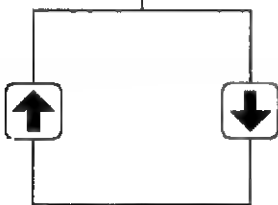
2. Press the <CLEAR> key to clear the stored data and receive new data.

<Receiving data from paper tape reader>

① PTR ② Edit-Sy

1

Read tape > ENTER
□□□□ tape



ENTER

Reading tape

Data IPT finish

Press END-key

E N D

[ENTER] [EDIT]
[COMMUNICATE]
[START (Sewing)]

1. Press the <1> key to select ① PTR (paper tape reader).

2. Tape type is displayed on the screen.

TAJIMA

BARUDAN

ZANGS

Select one of them using the <↑> and <↓> keys.

* Prepare the paper tape and the paper tape reader referring to page 156.

3. Press the <ENTER> key to begin.

4. After this message is displayed, press the <END> key.

5. The machine returns to the main menu.

[NOTE] This machine cannot manage a multi-volume file (one pattern's data that separates into more than one volume). If that is the case, use the editing system.

1 Setting communication mode (3)

<ERROR MESSAGES when receiving data from paper tape reader>

Tape read ERR

(CAUSE)

- ① Communication cable breakage during receiving.
- ② Paper tape breakage
- ③ Paper tape reader is turned off.
- ④ Improper baud rate (refer to the [NOTE 4] on page 156).

Can't communi.

(CAUSE)

- ① Poor connection between the paper tape reader and the machine.
- ② Paper tape reader is turned off.
- ③ Communication cable breakage

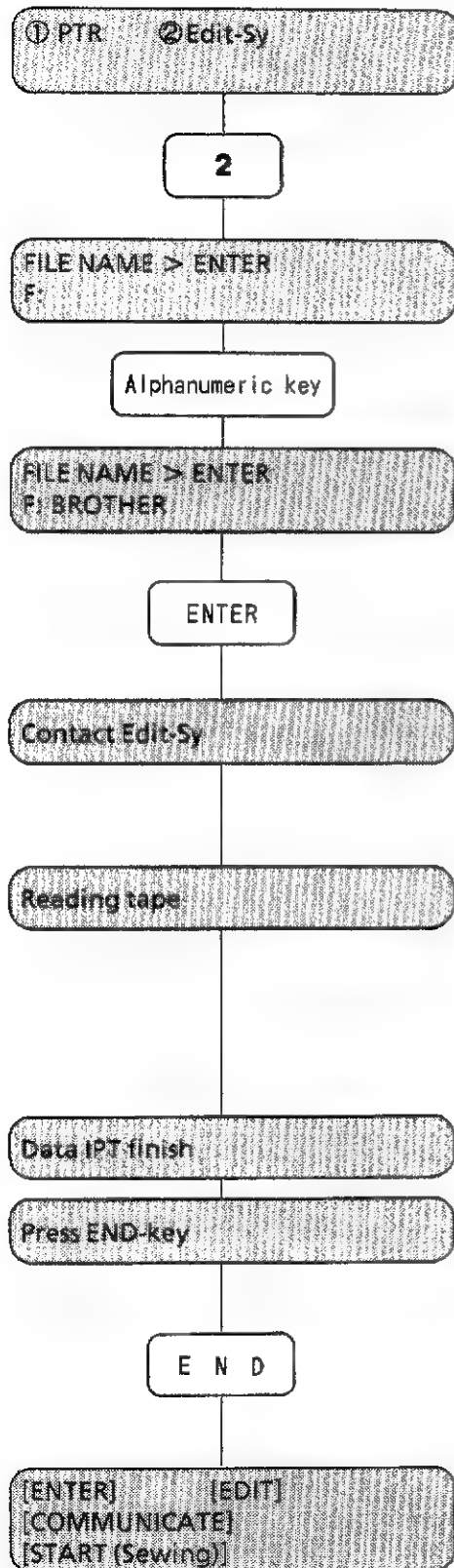
E N D

Press the <END> key to clear the messages above.

ENTER

Through the paper tape.
Press the <ENTER> key to re-start.

<Receiving data from Editing system>



1. Press the <2> key to select ②Edit-Sy (editing system).

2. Type the file name (within 8 characters) for reading with the numeric keys.

3. Press the <ENTER> key to begin.

4. After reading is completed, press the <END> key.

5. The machine returns to the main menu.

1 Setting communication mode (5)

<ERROR MESSAGES when receiving data from Editing system>

Can't communi.

(CAUSE)

- ① The machine is not connected to the editing system.
- ② The editing system is not in the communication mode.
- ③ The editing system is turned off.
- ④ Cable disconnection between the editing system and the machine
- ⑤ The editing system is in communication with the other machine.

Comm. Line Busy

(CAUSE)

- ① Breakdown in entire editing system

This message is displayed when the communication does not start while the line between the editing system and the machine is connected.

(CURE)

- ① Reset the editing system to enter communication mode.
- ② Repair the breakdown.

Comm. Line Error

(CAUSE)

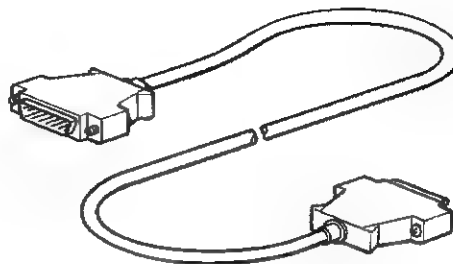
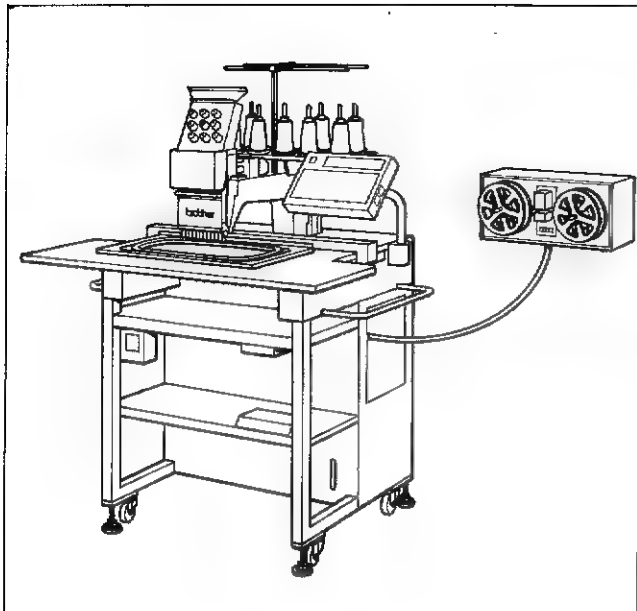
- ① Data error during communication
- ② Cable disconnection during communication
- ③ The editing system is turned off during communication.

E N D

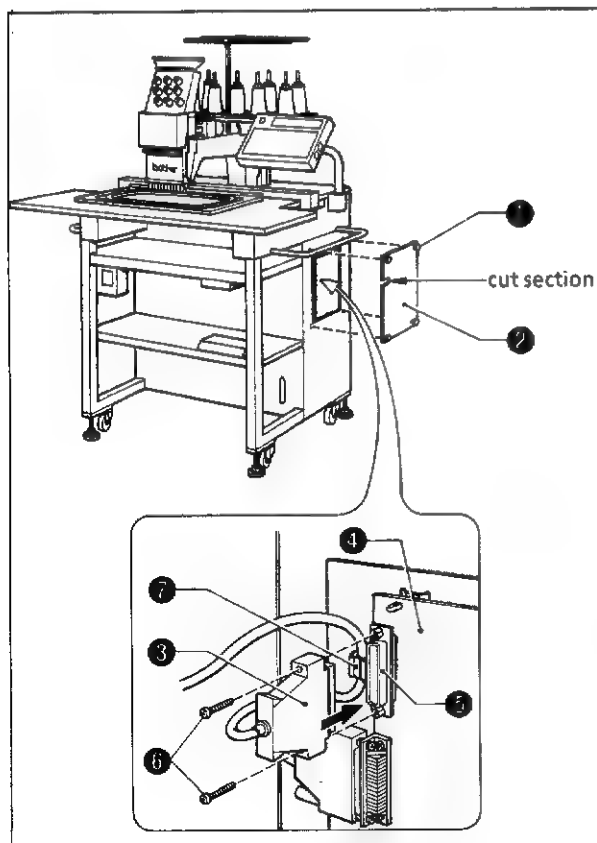
ENTER

Press the <END> key to clear the error messages above.
Press the <ENTER> key to re-start.

Connect them using RS cable assembly (optional).

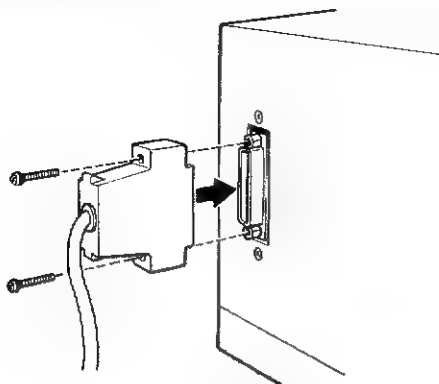


<Connecting cable with machine>



1. Remove the four nylatches ❶ and the main PCB cover ❷.
 2. Connect the connector (either of the two may be used) of the RS cable assembly ❸ (optional) with the connector ❹ of the RS plug circuit board ❹. Secure with the two screws ❺.
 3. Put the cord of the RS cable assembly ❸ to the cord clamp ❷. Attach the main PCB cover ❷ with four nylatches ❶.
- [NOTE] Make sure that the cord comes out through the recess of the cover ❷.

<Connecting the cable with the paper tape reader>



1. Connect the connector of the RS cable assembly (optional) with the RS 232C connector of the paper tape reader.

[NOTE1] Use only the paper tape readers in the table below for BAS-411.
Do not use other paper tape readers. Others may not interface with BAS-411 or cause trouble.

Maker	Production code	Interface specification. (Connector type)	RS cable type (optional)
GN Telematic Inc.	GNT27	RS232C interface (female)	GNT 27 RS cable assembly Code: S17064-001 and RS cable assembly Code: S15406-001
	GNT4604	RS232C interface (DCE connector female)	RS cable assembly Code: S15406-001
		RS232C interface (DCE connector male)	GNT4604 cable assembly Code: S18957-001 and RS cable assembly Code: S15406-001
	GNT2910	RS232C interface (pin 9, male)	GNT2910 cable assembly Code: S21660-000 and RS cable assembly Code: S15406-001

Set the paper tape reader switches as follows for BAS-411.

- ① Character length 8 bit
- ② Stop bit length 1 bit
- ③ Baud rate 9,600 baud (for 4,800 baud-paper tape reader, change the baud rate of the machine following NOTE 4).

2 Connecting paper tape reader with machine (3)

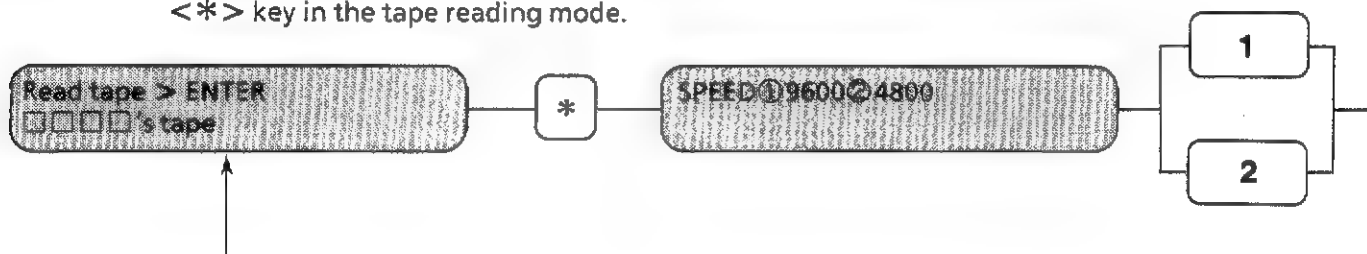
* Among paper tape readers that can be connected with the BAS-411, BROTHER deals in the following paper tape reader as an option. (Contact Brother's shop for details.)

maker	type	name	part code	Vol. Spec.
GN telematic Inc.	GNT27	GNT27-100V assembly	S18444-000	AC120V- area or 240V-area AC220 - 240V-area (in Europe)

[NOTE2] When you purchase above paper tape reader GNT27;
GNT27RS cable assembly (S17064-001) comes with it.

[NOTE3] The above three switches (Brother options) on the paper tape reader ① ② ③ are already set at shipping.

[NOTE4] Of the set points ①, ② and ③, only ③ (baud rate) can be changed on the machine using the <*> key in the tape reading mode.



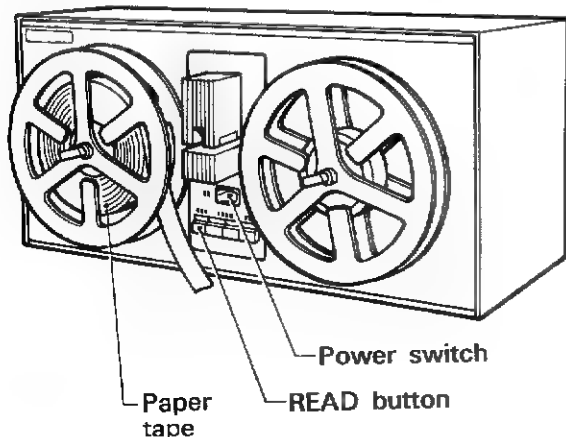
Press the <1> key to set 9,600 baud. Press the <2> key to set 4,800 baud.

This set point will be retained until the machine is turned off. Once the machine is turned off, the set point returns to 9,600 baud.

<Operating and preparing paper tape reader>

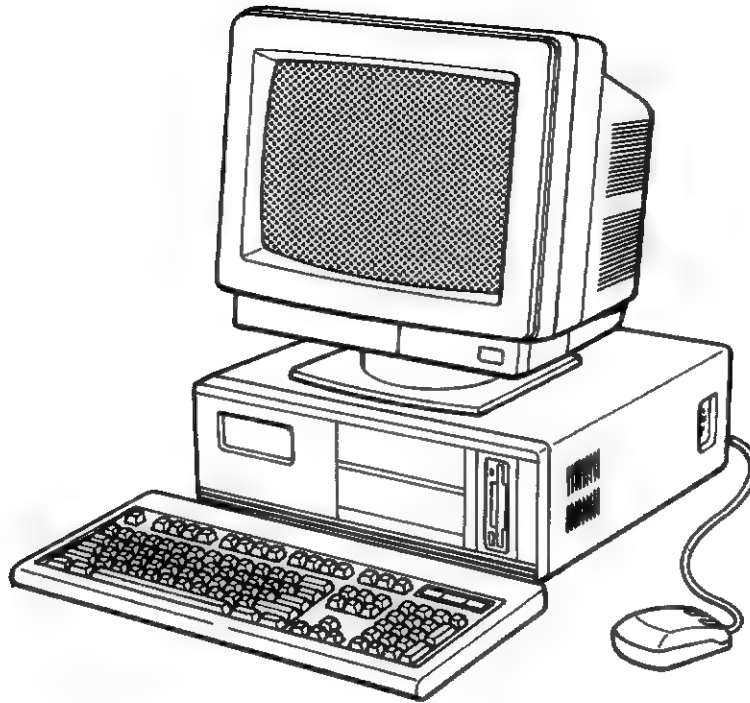
* Prepare the machine. (Turn on the power and select "paper tape" in communication mode.)

[GNT27]



- 1) Turn on the power.
- 2) Thread the paper tape to the paper tape reader.
 - (1) For GNT27:
Turn the "READ" button ON (indicator lights).
 - (2) For GNT4604:
Turn the "READER" button ON and set the mode switch on the operation panel to "LINE".
 - (3) For NPR-5200:
Turn the "LINE" button ON (indicator lights).
 - (4) For GNT2910:
Turn the power switch ON.
- 3) Now that the paper tape reader is ready:
Press the <ENTER> key of the machine to begin.

What is needed?



The Editing System is basically a software program. To use it, the following hardware is required.

Hardware

- ① IBM Personal Computer AT or PC-AT compatible with:
 - 640KB of available memory
 - appropriate keyboard
 - one or two 3.5-inch floppy disk drive(s)
 - hard disk (capacity 20MB or larger)
 - VGA or EGA display or equivalentand the following interface units:
 - VGA or EGA video adapter
 - mouse interface (compatible with ②, below)
 - printer interface (14-pin connector)
 - RS-232C interface (9-pin connector)
- ② MicroSoft mouse or equivalent

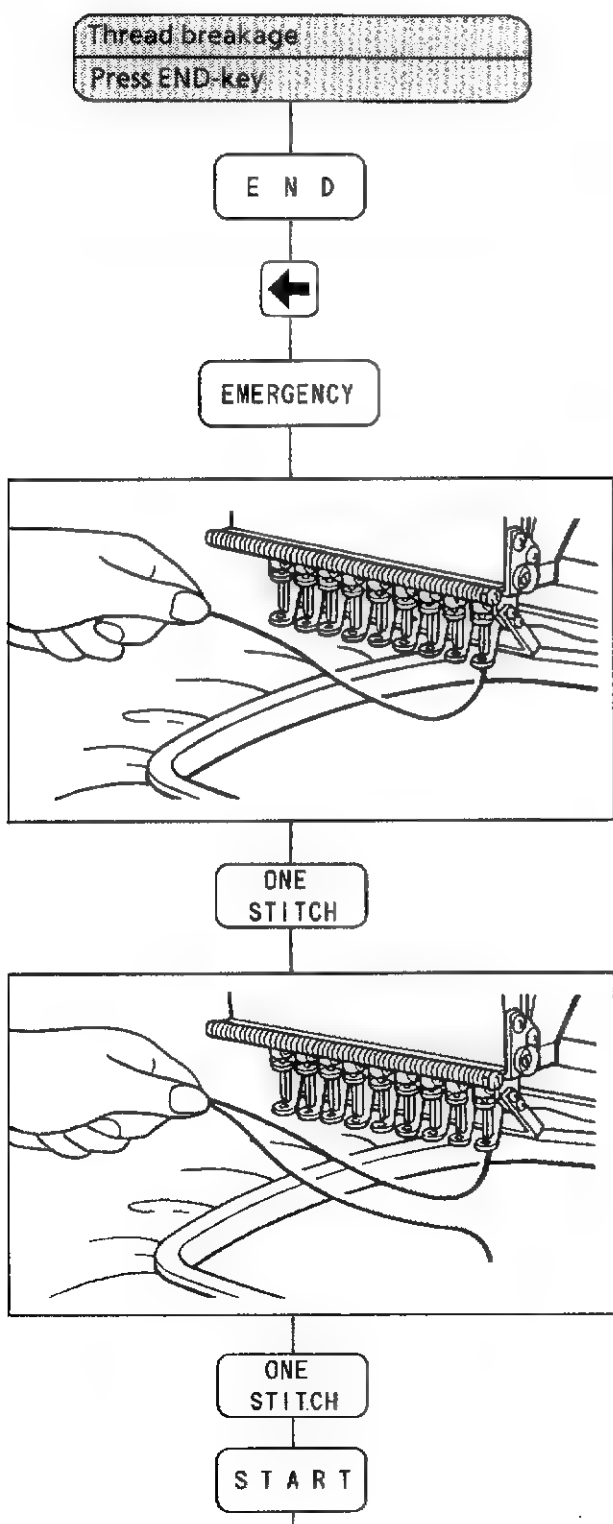
- Use of a math coprocessor will increase the processing speed.
- For operation of the editing system, refer to the "Instruction manual for the editing system".

VII OTHER

1 Recommendations on embroidering

The following will occur when enlarging characters and patterns on the BAS-411.

Example: If the letter "O" is enlarged 9.99 times in font No. 1, under picking will continue from the first stitch (stitch length approx. 18 mm), but because the stitch length is too long, stitches will not be properly formed and thread cast-offs may occur. If this happens, sew with the following procedure.



1. "Thread breakage", "Press END-key" will be displayed alternately.
2. Press the <END> key.
3. Return to the stitch before the position at which the thread cast-off occurred with the step-back key, and then press the <EMERGENCY> key and stop the step back operation.
4. Hold the needle thread by hand and press the <ONE STITCH> key.
5. Pull the needle thread out and bring the bobbin thread to the top of the material.
6. Hold the needle and bobbin threads, and then press the <ONE STITCH> key 5-6 times. Cut the needle and bobbin threads held in hand with scissors.
7. Press the <START> key. Continue sewing.

2 Error messages (1)

Refer to the table below if an error message is displayed.

By pressing the <END>key, the message will disappear and the display will return to the previous menu.

Message when power is turned on	Cause	Solution
Keyboard ROM NG.	PROM version of key board does not match PROM version of PCB.	Change PROM version of key board to matching PROM version of PCB. Contact your dealer.
N Bar stop ERR	Pulley is not in proper position.	Turn pulley till needle bar is in proper position.
Missed X ORG. PT Missed Y ORG. PT	Damaged circuit board, sensor defective, cable defective, pulse motor defective, blown fuse.	Contact your dealer.
Over travel	<ol style="list-style-type: none"> 1. X-Y carriages movement exceeds maximum area. 2. Overtravel sensor is in incorrect position or defective. 3. XY home position sensor is in incorrect position or defective. 4. Damaged circuit board. 	<p>Turn power off. Move carriages X and Y to center of area manually, then turn power on again. If same error message is displayed again, turn power off, then on again while pressing <EMERGENCY> key. (Clearing backup memory.)</p> <p>Contact your dealer.</p>
Memory Clear	Back-up data in the memory disappears.	Press key according to message.

Message in entry mode	Cause	Solution
No File	Inputted data has something wrong.	Check file name of data and re-enter.
Data ERR.		Check where data was made, then contact your dealer.
Disk ERR.	<ol style="list-style-type: none"> 1. Data is input without inserting floppy disk. 2. While reading data, floppy disk is removed when machine runs in sewing mode. 3. Damaged circuit board, defective cable, defective FDD. 	<p>Insert floppy disk in proper position and re-enter. Do not remove floppy disk from FDD during sewing in this mode.</p> <p>Contact your dealer.</p>

Message in editing mode	Cause	Solution
Can't edit Data	<ol style="list-style-type: none"> 1. Some of data entered in communication mode has items that cannot edit. 2. Some of data entered in sewing mode while reading data has items that cannot edit. 3. According to editing item, there is item that cannot be set. 	Refer to page 57
T. Length larger	Entered value exceeds maximum area (450 mm x 285 mm).	Re-edit data.
Area Over	Improper area setting	Re-set area or re-edit data.
Arrangement Err	Value set in arrangement mode by [Each] is incorrect (ex. spaces → ← ↑ ↓ are inputted) or not all values are inputted. (ex. base line, base point.)	Refer to page 83-101 "Arranging."

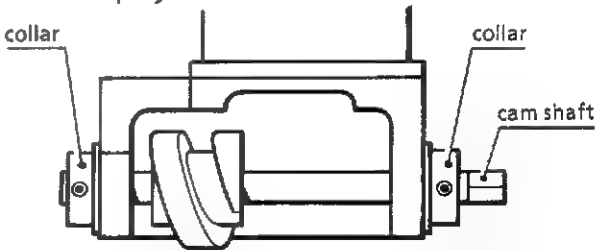
Message in sewing mode	Cause	Solution
No inputted Data	Without sewing data entered, you try to set machine to sewing mode.	First, input sewing data, then start sewing.
Short of Area	Improper area setting	Re-set area or re-edit data.
**th Data ERR	Entered data has something wrong.	Check where data was made, then contact your dealer.
**th Memory OVR	Too much data, or number of inputted stitches is over inside memory capacity and cannot manage it.	If memory expansion board (optional) is not set, set memory expansion board or decrease input data.
Area over	When sewing starts from current needle position, sewing pattern is over the area.	Move hoop to position where message disappears, or widen area.
B. Thread empty	Set sewing times in bobbin thread counter is completed.	Re-set sewing times in bobbin thread counter.
Thread breakage	<ol style="list-style-type: none"> 1. Needle thread breakage 2. Needle thread is not passed through the thread sensor spring. 3. Bobbin thread breakage 4. Bobbin thread runs out. 	Pass thread.
Over load	<ol style="list-style-type: none"> 1. Pulley is too tight. 2. Electrical failure 	Remove load. Contact your dealer.

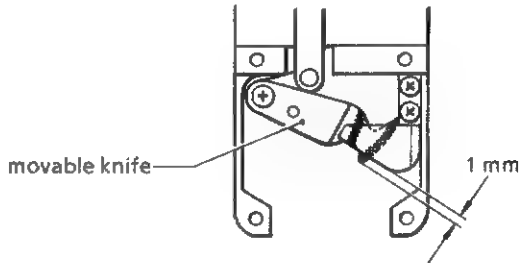
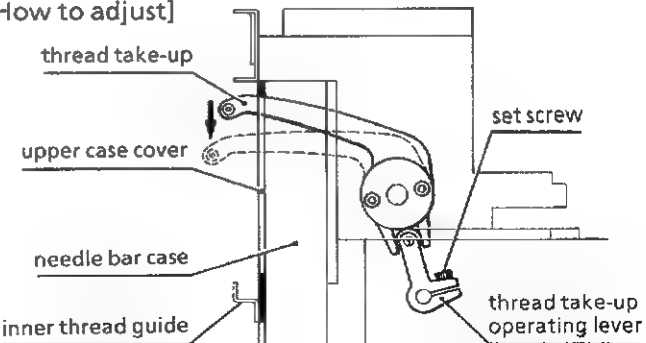
Message in communication mode	Cause	Solution
Can't communi	<ol style="list-style-type: none"> 1. Paper tape reader or editing system does not connect with machine by cable. 2. Power of paper tape reader or editing system is not turned on. 3. Editing system does not enter communication mode. 4. Editing system is communicating with another machine. 	<p>Link with exclusive cable.</p> <p>Turn on power.</p> <p>Set editing system to communication mode. Wait till communication ends.</p>
Communicate ERR.	<ol style="list-style-type: none"> 1. Data error occurs during communicating with editing system. 2. Editing system exits from communication mode while machine is communicating with editing system. 3. Power of editing system is turned off during communicating with editing system. 	<p>Re-communicate.</p> <p>Set editing system to communication mode, then communicate again.</p> <p>Turn on power of editing system again, enter communication mode.</p>
Edit-Sy. busy	Editing system is defective, or breakdown.	Turn on power of editing system again, enter communication mode. Contact your dealer.
Tape read ERR	<ol style="list-style-type: none"> 1. Poor punch of paper tape 2. Paper tape runs short. 3. Dirty head of paper tape reader 4. Power of paper tape reader is not turned on. 5. Paper tape type is wrongly selected. 6. Improper communication baud rate 	<p>Remake paper tape.</p> <p>Clean head.</p> <p>Turn on power.</p> <p>Select proper type to read paper tape. Adjust baud rate.</p>

Message in replacing needle bar	Cause	Solution
N. Case POS. ERR	<ol style="list-style-type: none"> 1. Needle bar is not set properly. 2. Damaged circuit board 	Position needle bar case properly. Contact your dealer.
N. Case locked	<ol style="list-style-type: none"> 1. Needle bar case is too tight mechanically, or locked and cannot move. 2. Electrical failure 	<p>Remove load.</p> <p>Contact your dealer.</p>

3 Troubleshooting (1)

In case of a malfunction, diagnose the problem referring to the table below.
If the problem persists, turn off the power and contact your dealer.

Problem	Check point
1. The display is blank, though power is on.	1. Is contrast dial properly adjusted?
2. The indicator does not light, though a floppy disk is in disk drive.	1. Is floppy disk damaged? 2. Is disk drive functioning properly?
3. Thread breakage	1. Is machine properly threaded? 2. Is thread tension too high? 3. Is rotary hook assembly clogged? 4. Is there thread in the bobbin? 5. Is needle bent? 6. Is there a rough edge or flaw on needle plate, rotary hook, or bobbin case that might cut the thread? 7. Is needle installed correctly?
4. Needle touches embroidery hoop.	1. Is area setting done properly? 2. Is embroidery hoop too small?
5. Bobbin thread cannot be wound.	
6. Needle breaks.	1. Is needle direction and height properly adjusted? 2. Is needle bent? 3. Is needle tip blunted? 4. Is timing of needle and rotary hook correct? 5. Is there looseness or play in the needle bar case? When there is play in the needle bar case  <p>Adjust collar when there is looseness of cam shaft in needle bar flip-up mechanism.</p> 6. Is rotary hook holder properly attached so that rotary hook does not rotate?
7. Monograms are not sewn properly.	1. Is material edge caught in the machine? (Are embroidery hoop and other related parts operating correctly?) 2. Is material stretched properly? 3. Is thread tension proper?

Problem	Check point
8. Machine operates incorrectly.	<ol style="list-style-type: none"> 1. Is set screw of rotary encoder loosened? 2. Is set screw of machine pulley loosened? 3. Is set screw of N65 pulley loosened? 4. Is synchronizer adjusted properly? 5. Are wires of carriages X and Y off? 6. Are set screws of wire drums X and Y loosened? 7. Are set screws of pinion gears in pulse motors X and Y loosened? 8. Is sewing data in floppy disk normal?
9. Upper shaft is locked at some point of a cycle.	<ol style="list-style-type: none"> 1. Is movable knife for thread trimming stopped in middle of operation? [How to adjust] <ul style="list-style-type: none"> • Remove thread or other interruption for correct thread trimming operation. • Remove needle plate and reset it in proper position manually as in the figure below.  <p>[NOTE] When movable knife is in middle of operation, the safety system works so that the upper shaft cannot rotate.</p> 2. Is thread take-up stopped with striking upper case cover? [How to adjust]  <p>Loosen the bolt of the thread take-up operating lever to adjust movable range of thread take-up, then re-tighten it.</p> 3. Is position of needle bar clamp or stopper correct?

Problem	Check point
10. Upper shaft does not turn.	1. Is thread tangled in rotary hook? [How to adjust] Remove rotary hook and see whether upper shaft rotates or not. If thread is tangled, turn upper shaft by force to trim thread or remove rotary hook and thread.
11. Stitch cannot be made.	1. Is needle attached properly? 2. Is timing of needle and rotary hook correct?
12. When the power is turned on, the hoop moves till the hoop is over the sewing area.	Turn off the power, then turn on the power again while pressing the emergency button. When there is a problem even if this is done, contact your dealer.
13. When sewing is resumed in restart mode, the hoop moves till the hoop is over the area.	
14. Thread breakage detector functions and machine stops although thread breakage does not occur.	Is thread breakage detect stud operation normal? (Is spring tension proper?)

3 Troubleshooting (4)

Following is displayed when trying to read sewing data from a floppy disk while the floppy disk is inserted into the floppy disk drive.

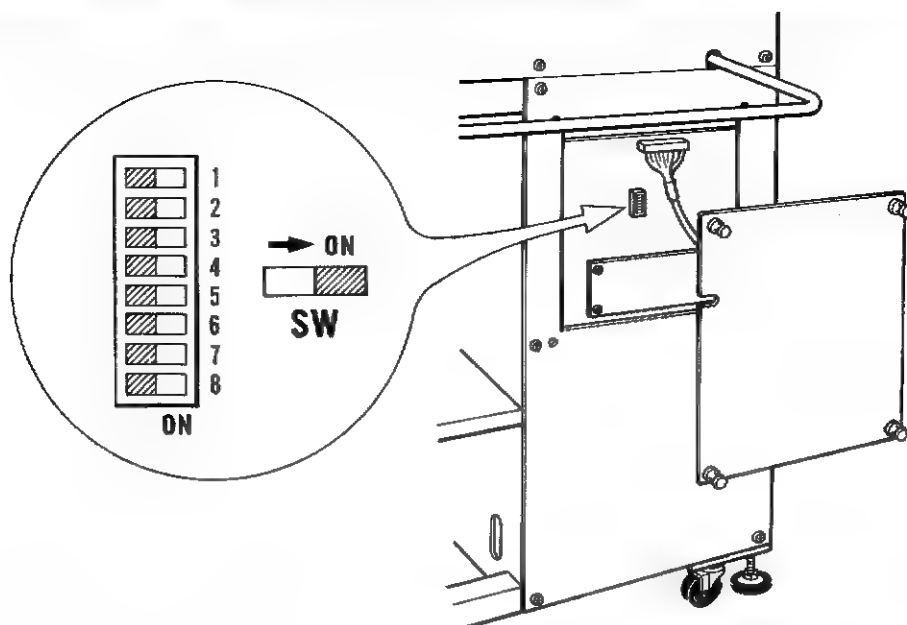
- ① "Disk ERR." is displayed.
- ② "Data ERR." is displayed.
- ③ "Reading" is displayed and remains.

When another floppy disk is inserted, reading and sewing can be performed normally. The floppy disk drive may not be defective, but it is not clear what is wrong.

[Cause and solution]

- (1) **Floppy disk has not been previously defective.**
If it occurs on the floppy disk which was able to use normally before, the floppy disk may be defective. (Repairing is impossible.)
Carefully deal with floppy disk. And for security, back up data on other storage medium, like personal computer, punching machine and so on.
- (2) **The floppy disk was originally defective.**
If it occurs at a first-time use, the floppy disk may be originally defective.
Consult with shop you bought it or its maker.
- (3) **Following floppy disk cannot be used in BAS-411 even though it can be used in other embroidery machine.**
When 3.5" 2HD floppy disk was made in 2DD format.
When 3.5" 2DD floppy disk was made in 2HD format.

If your problem does not come under case (1), (2) or (3), please consult with Brother's shop.



At shipping, all switches are set to OFF.

1. SW1 Use this key to choose between mm and inch unit system

By switching the DIP switch on, the total length of a pattern or the set sewing area can be specified in inches.

Display in inches

Example 1 Area

ARA V 10.10" H 15.30"

This indicates that the vertical length is 10.10 inches (= 257mm) and the horizontal length is 15.30 inches (= 389mm).

Example 2 Total length

LG-V □□.□□" H □□.□□"

When setting the total length :
the data is in 4 digits, the minimum unit being 0.01 inches.

Example 3 To set and confirm hoop feed point

HOP: X 10.00" Y 15.00"

Example entry

When setting the vertical length for 3.5 inches and the horizontal length for 10 inches:

Vertical 0 3 5 0

Press numeric keys



Horizontal 1 0 0 0

Press numeric keys



Enter digits in order from left to right.

[NOTE] In using inches, errors within 0.254mm should be tolerated, for the minimum unit is 0.01 inches.
In using millimeters, errors within 1mm should be tolerated, for the minimum unit is 1mm.

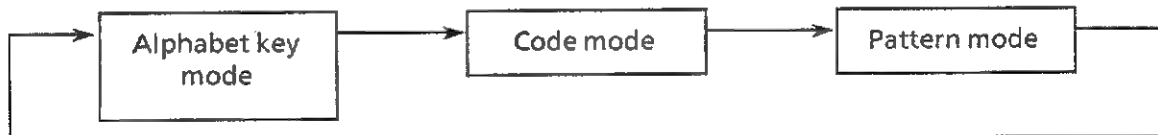
2. SW2 The mode display order in the entry mode can be set differently with DIP switch 2.

(When actually in the entry mode, switching to the next mode is done by pressing the PATTERN key.)

- ° SW2 = ON
Pattern mode is displayed first.



- ° SW2 = OFF
Alphabet key mode is displayed first.



3. **SW3** The sewing start point of the embroidery can be changed by switching DIP switch 3.
 - SW3 = ON
When the entered data is one pattern, the needle location will be the sewing start point (the first stitch).
In this case, the area check and the test feed function are not available.
In entry mode or when the entered data is two patterns or more, the sewing start point will be the same as when the SW3 is OFF.
 - SW3 = OFF
The sewing start point is selected by the centering function.

4. **SW4** Use this key to set the thread trimming between characters (Brother format) to ON/OFF.
 - SW4 = ON
Thread trimming will not be done between characters. (Cross-over stitch is possible.)
 - SW4 = OFF
Thread trimming will be automatically done between characters. (Cross-over stitch is not possible.)

5. **SW5** Data reading or sewing can be completed even if another floppy disk is inserted half way.
 - SW5 = ON
Even if another floppy disk is inserted during data reading or sewing of a character (pattern), machine will continue reading or sewing until it is done.
 - SW5 = OFF
If another floppy disk is inserted during data reading or sewing of a pattern (character), machine will stop operation at that point.

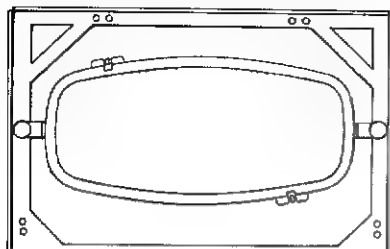
6. **SW6-SW8** Not available (Should be set to OFF.)

[NOTE] Do not take out the floppy disk from the disk drive during data reading or sewing. It may cause errors or hinder correct sewing.

Embroidery hoop types (1)

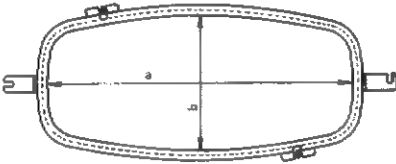
[NOTE] The parts indicated by the ※ symbol in the parts code column are standard parts.

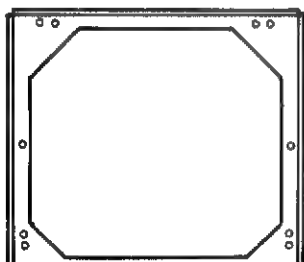
1 Holder base



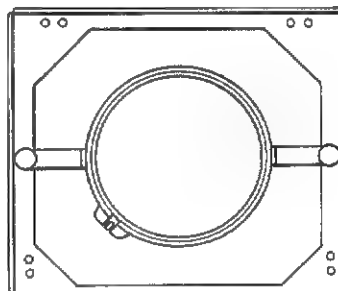
To embroider plain material.

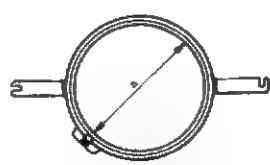
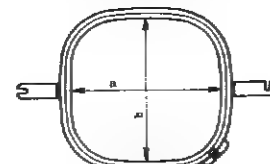
FRAME HOLDER BASE ASSEMBLY
※ S16128-001

	a × b		
PLASTIC SQUARE FRAME WITH ARMS SPF A-45 × 23	 S15654-001	445 × 195	S15654-001
PLASTIC SQUARE FRAME WITH ARMS SPF A-45 × 27		445 × 240	S15658-001
PLASTIC SQUARE FRAME WITH ARMS SPF A-45 × 32		445 × 290	※ S15660-001

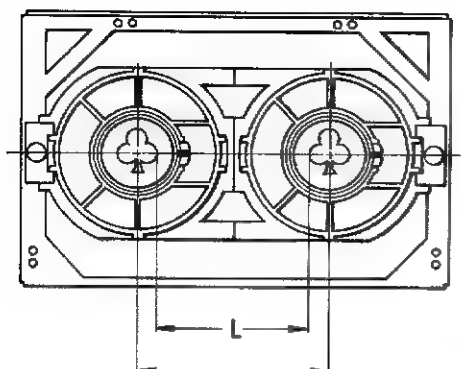


S16129-001

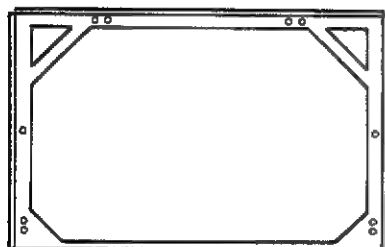


	a × b		
PLASTIC SQUARE FRAME WITH ARMS SPF A-21	 S15642-001	Ø200	S15642-001
PLASTIC SQUARE FRAME WITH ARMS SPF A-25		Ø240	S15646-001
PLASTIC SQUARE FRAME WITH ARMS SPF A-24 × 24	 S15650-001	226 × 226	S15650-001

2 Spider net frames

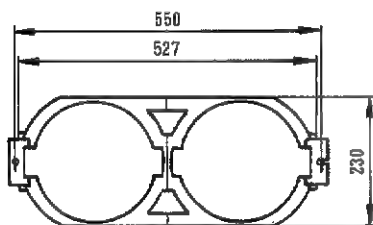


The two spider net frames can be set to the frame holder base. When repeat sewing is horizontally performed twice, input "L" mm space. Sewing can be repeatedly performed. (Refer to page 119.)



FRAME HOLDER BASE ASSEMBLY
S16128-001

SPIDER NET FRAME HOLDER
PFH2-2
S15612-000



SPIDER NET FRAME
SPFH-07

PLASTIC ROUND
FRAME SPF-07

SPIDER NET FRAME
SPFH-09

PLASTIC ROUND
FRAME SPF-09

SPIDER NET FRAME
SPFH-12

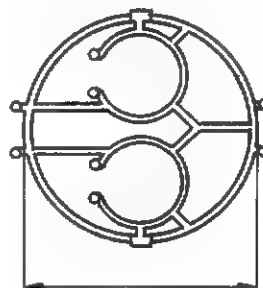
PLASTIC ROUND
FRAME SPF-12

SPIDER NET FRAME
SPFH-15

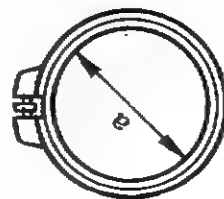
PLASTIC ROUND
FRAME SPF-15

SPIDER NET FRAME
SPFH-18

PLASTIC ROUND
FRAME SPF-18



223
S15613-000



S15618-000

Ø223 S15613-000

Ø62 S15618-000

Ø223 S15614-000

Ø82 S15619-000

Ø223 S15615-000

Ø112 S15620-000

Ø223 S15616-000

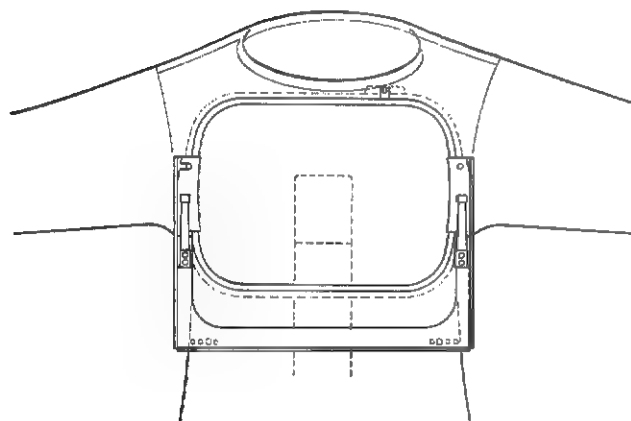
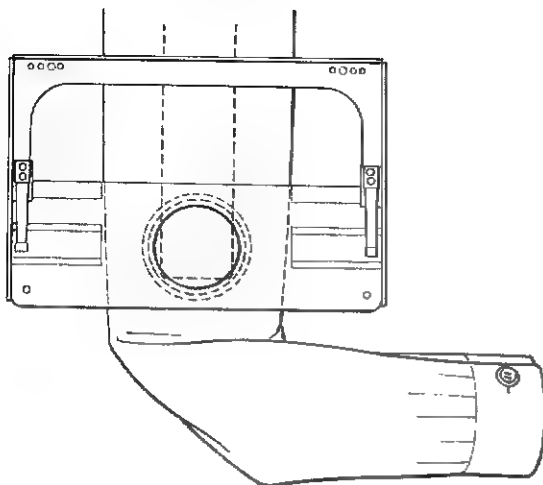
Ø140 S15621-000

Ø223 S15617-000

Ø170 S15622-000

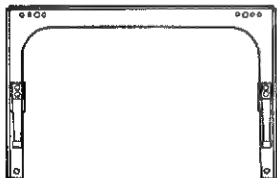

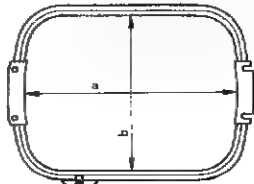
Embroidery hoop types (3)

3 Tubular frame



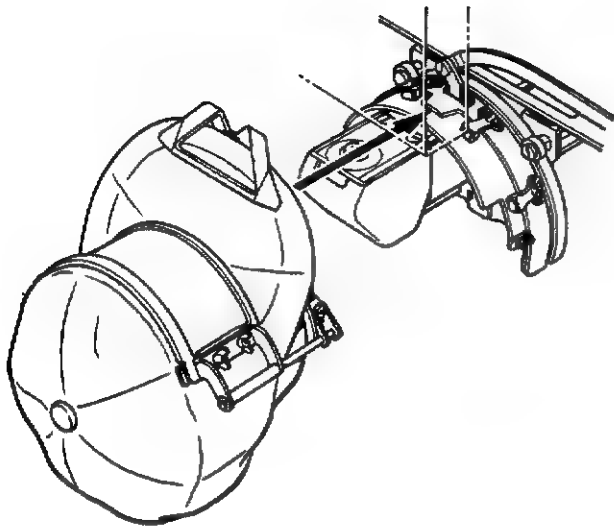
By removing the table plate and using the cylinder bed, embroidery for tubular materials can be done effortlessly.

It is convenient when embroidering on sleeves and the body of ready made clothing or on the back of round-neck shirt.

		a x b		
TUBULAR FRAME HOLDER BASE ASSEMBLY S15353-001 	TUBULAR ROUND FRAME WITH ARMS TFA-07	 S15623-000	Ø58	S15623-000
	TUBULAR ROUND FRAME WITH ARMS TFA-09		Ø78	S15624-000
	TUBULAR ROUND FRAME WITH ARMS TFA-12		Ø108	S15625-000
	TUBULAR ROUND FRAME WITH ARMS TFA-15		Ø136	S15626-000
	TUBULAR SQUARE FRAME WITH ARMS TFA-24 x 24	 S15628-000	226 x 226	S15627-000
	TUBULAR SQUARE FRAME WITH ARMS TFA-24 x 30		237 x 308	S15628-000

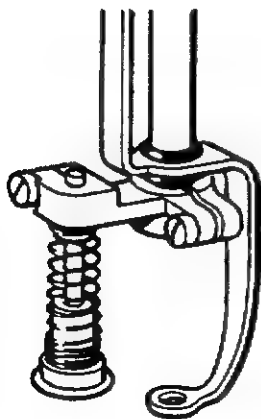
4 Cap frame device

Embroidery for ready made cap can be done finely.



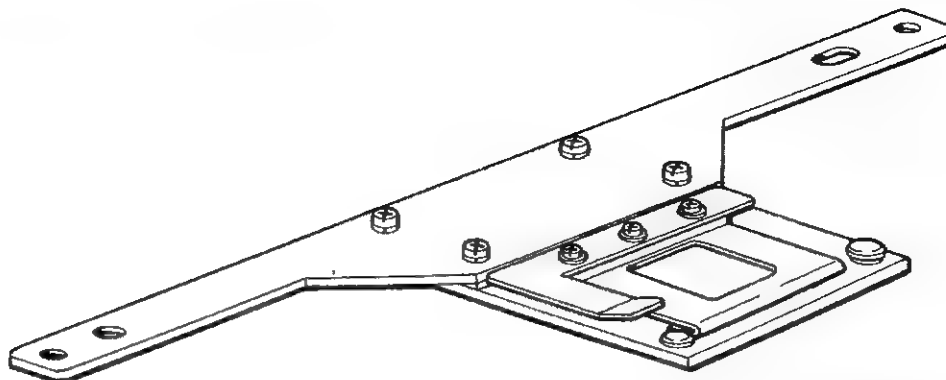
5 Boring attachment

Boring embroidery for blouses and tablecloth can be done beautifully.



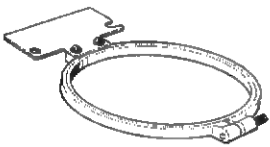
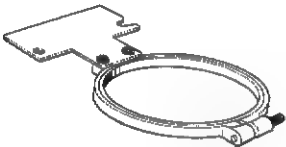
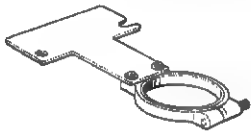
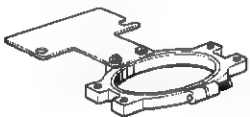
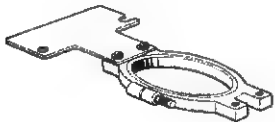
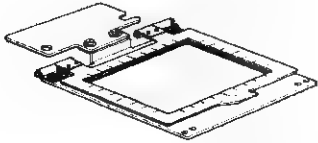
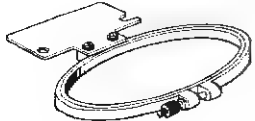
Embroidery hoop types (5)

⑥ Name frame

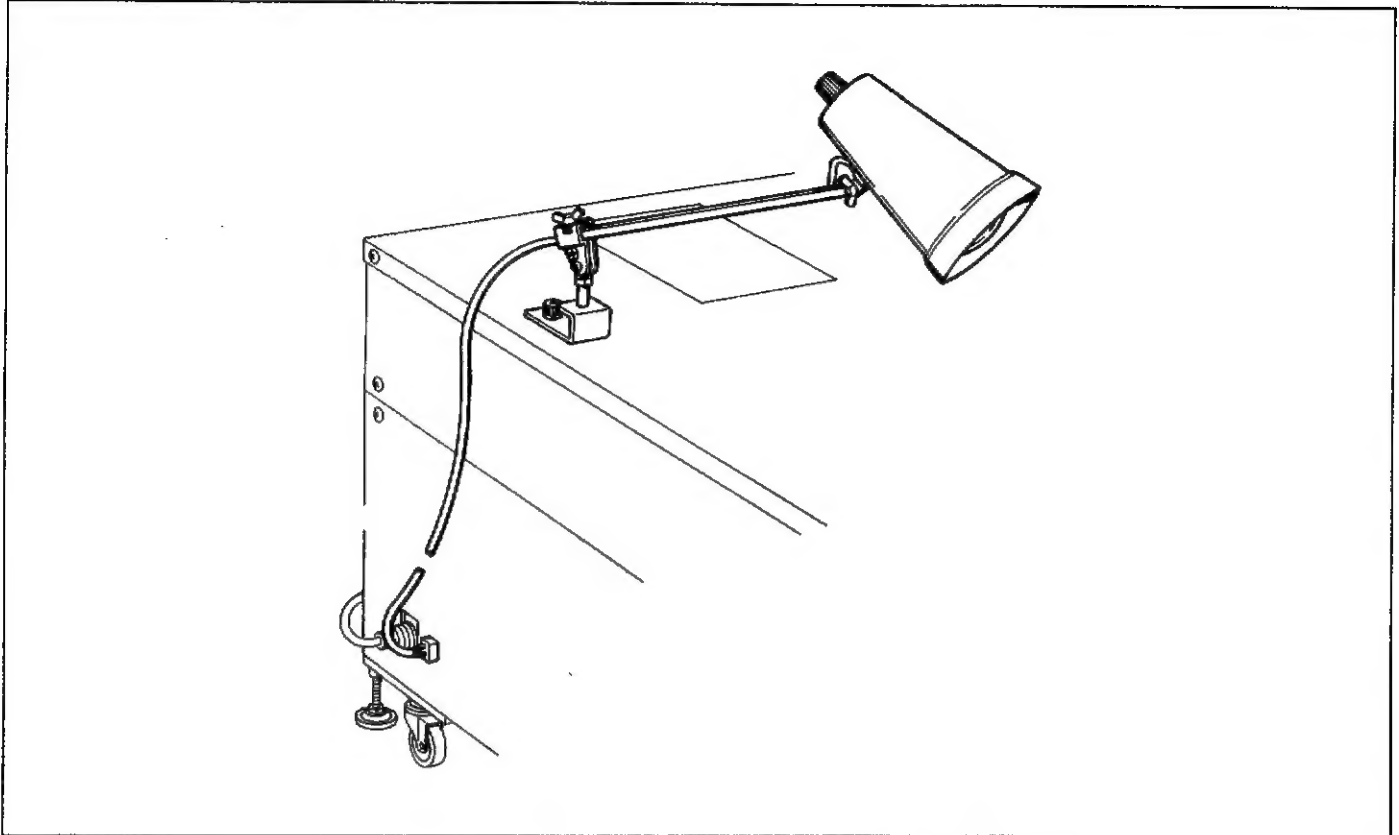


NAME FRAME ASSEMBLY S20821-001

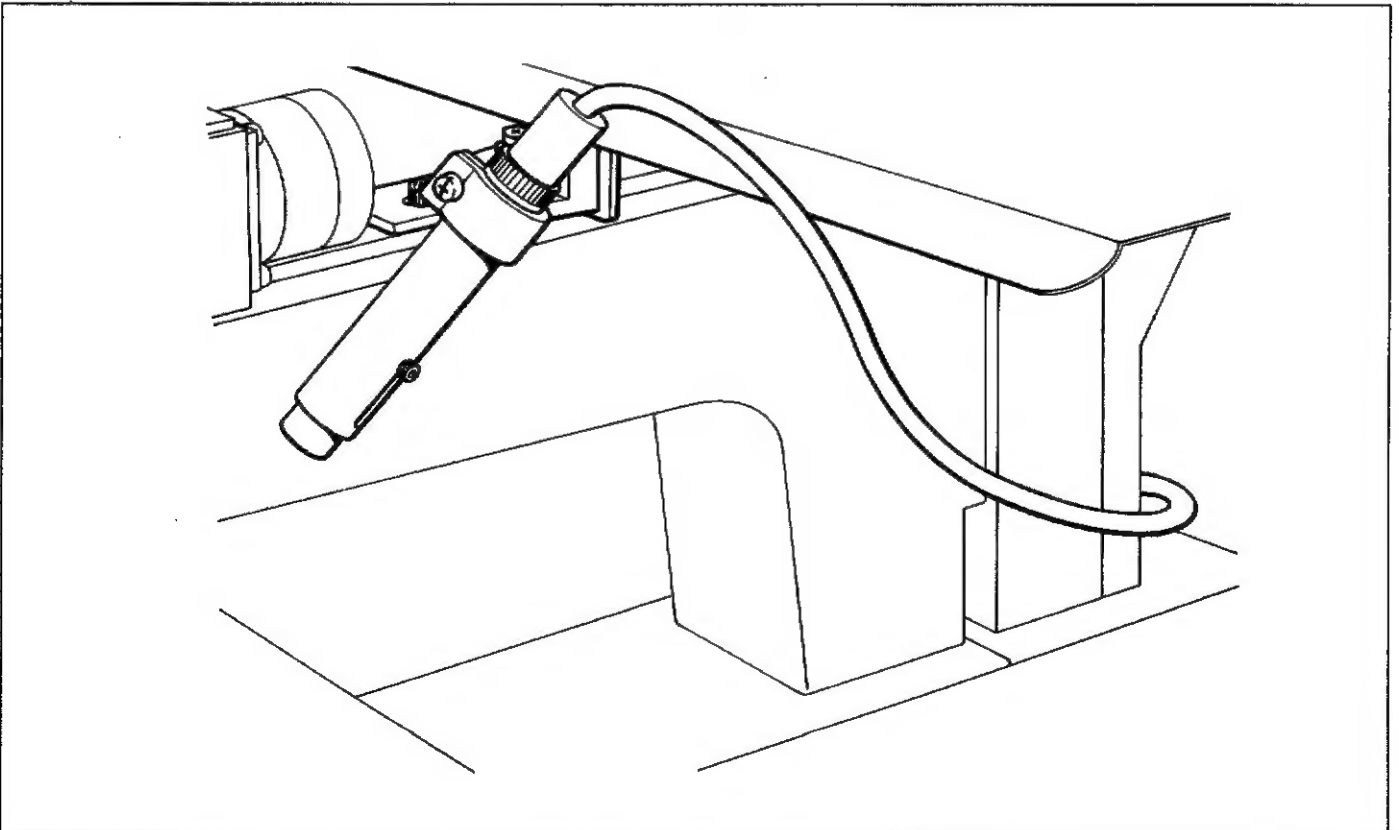
Embroidery of names can be done effortlessly.

	HOOP (A) ASSEMBLY 100 × 100 S09843-201
	HOOP (B) ASSEMBLY 65 × 65 S09844-201
	HOOP (C) ASSEMBLY 30 × 30 S09845-201
	HOOP (D) ASSEMBLY 35 × 65 S09846-201
	HOOP (E) ASSEMBLY 65 × 35 S09847-201
	MAGNET CLAMP 70 × 90 S09848-001
	HOOP 3 × 6 ASSEMBLY 50 × 100 157340-101

1 ML 651 lamp set (S15378-001)

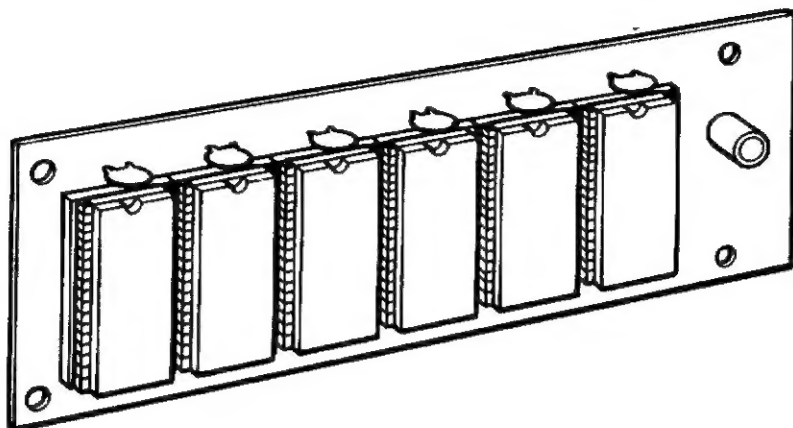


2 Marking light (S21076-000)

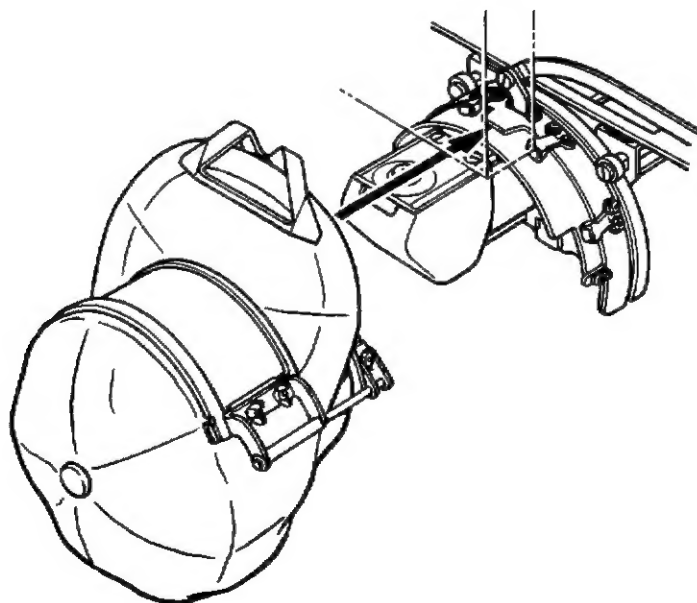


Options (2)

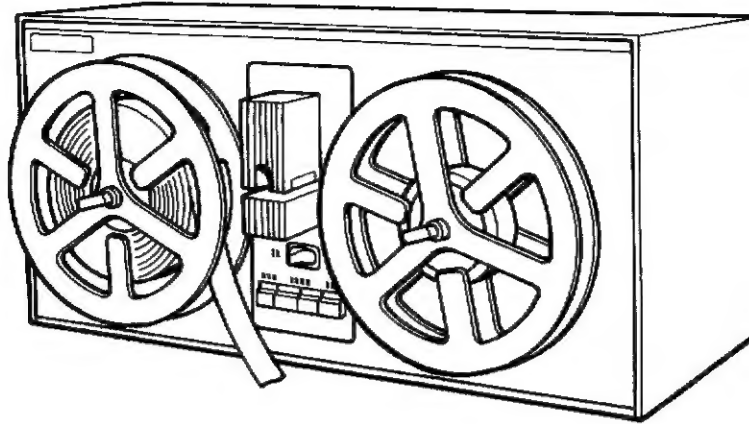
③ Memory expansion board (S18788-001 / circuit board B439064 assembly)



④ Cap frame device (S21069-001)



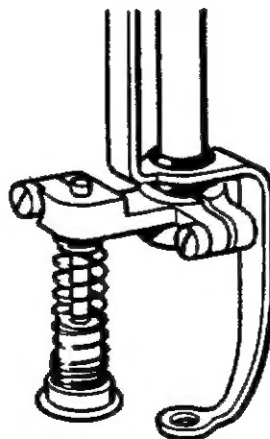
5 Paper tape reader (S18444-000)



GNT 27 RS cable assembly (S17064-001)

RS cable assembly (S15406-001)

6 Boring attachment (S21061-001)



* Various kinds of optional parts are available besides the ones listed here. Contact your dealer for more information.

